

CLASSIFICATION OF THE SUBGENUS *ATHYSANELLA*, GENUS *ATHYSANELLA* BAKER (HOMOPTERA, CICADELLIDAE, DELTOCEPHALINAE)¹

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ABSTRACT.—The subgenus *Athysanella* Baker is reviewed and a possible phylogeny of the group is discussed. A total of 35 species is recognized. Descriptions, illustrations, and a key to males are presented. Twelve new species are described: *aphoda*, *cursa*, *deserta*, *furnaca*, *hemijona*, *krameri*, *pastora*, *strobila*, *stylosa*, *vaticala*, and *whitcombi* are from the western United States, and *marthae* is from Mexico.

The subgenera of *Athysanella* Baker have been reviewed by Blocker and Johnson (1988). The nominate subgenus revised herein contains 35 species, of which 12 are new. Distribution of this subgenus is primarily in the western half of the United States, with 4 species recorded from Mexico and 4 from western Canada. The hosts are primarily shortgrasses.

Blocker (1984) has described the morphological variation that occurs in both sexes because of incompletely developed genital structures. Undeveloped and partially developed specimens are often difficult to identify. We have attempted to illustrate sufficient characters to allow identification of males, but the user must attempt to make identifications from a series of specimens that appear to be fully developed. As an example, the hind tibial spur of partially developed males may be absent or reduced; the genitalia also may be reduced in size.

Females are particularly difficult to determine. It is best to try to associate them with a male and then check the shape of the posterior margin of sternum VII. There is much infraspecific variation in specimens of both sexes. Ball and Beamer (1940) should be consulted for additional and original descriptions; Blocker and Wesley (1985) and Wesley and Blocker (1985) should be consulted for distribution in Canada-Alaska and Mexico, respectively.

Depositories

Persons and institutions (acronyms are used in the text) furnishing material for this study include (the authors regret any omissions):

- UAz — University of Arizona, F. Werner.
- CAS — California Academy of Science, P. Arnaud and N. Penny.
- CDA — California Department of Agriculture, R. Gill and J. Sorensen.
- CNC — Canadian National Collection, K. G. A. Hamilton.
- IPL — Insect Pathology Laboratory, USDA, Beltsville, A. L. Hicks and R. F. Whitcomb.
- KSU — Kansas State University.
- KU — Snow Entomological Museum, University of Kansas, R. W. Brooks.
- MWN — Collection of M. W. Nielson.
- OhSU — Ohio State University, P. S. Cwikla.
- OkSU — Oklahoma State University, R. A. Drew.
- OrSU — Oregon State University, P. W. Oman.
- UBC — University of British Columbia, G. Scudder and S. Cannings.
- USNM — U.S. National Museum, Natural History, J. P. Kramer.

Athysanella (*Athysanella*) Baker

Athysanella Baker, 1898: 185. Type species: *Athysanella magdalena* Baker, 1898, by original designation.

This subgenus is characterized by the presence of a hind tibial spur and the absence of a pygofer process (Blocker and Johnson 1988). It is a sister of the subgenus *Gladionura*.

Species of the subgenus *Athysanella*:

- aphoda* Blocker, n. sp. Nevada.
- aspera* Ball and Beamer, 1940. California.
- bifida* Ball and Beamer, 1940. Colorado, Montana, New Mexico, North Dakota, South Dakota, Texas, Wyoming, Canada.
- cursa* Blocker, n. sp. Arizona, Colorado, New Mexico, Utah.
- deserta* Blocker, n. sp. California.
- foeda* Ball and Beamer, 1940. Wyoming.
- fredonia* Ball and Beamer, 1940. Arizona, Colorado, New Mexico, Nevada, Utah.
- furnaca* Blocker, n. sp. California.
- gardenia* Osborn, 1930. Colorado, Wyoming.

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- frigida* Osborn, 1930.
globosa Ball and Beamer, 1940. Arizona.
hemijona Blocker, n. sp. California.
incerta Ball and Beamer, 1940. Colorado, Kansas, Montana, Nebraska, New Mexico, Wyoming.
incongrua Baker, 1898. Colorado, Iowa, Kansas, Nebraska, New Hampshire, New Mexico, Oklahoma, South Dakota, Texas, Wyoming.
kadokana Knull, 1951. Colorado, Montana, Nebraska, South Dakota, Wyoming, Canada.
kanabana Ball and Beamer, 1940. Arizona, Kansas, New Mexico, Utah.
krameri Blocker, n. sp. California.
laeta Ball and Beamer, 1940. Arizona, New Mexico.
magdalena Baker, 1898. Arizona, California, Colorado, Montana, New Mexico, Nevada, Oklahoma, Texas, Wyoming, Mexico.
marthae Blocker, n. sp. Mexico.
parca Ball and Beamer, 1940. Colorado, New Mexico.
pastora Blocker, n. sp. New Mexico.
plana Ball and Beamer, 1940. California.
planata Ball and Beamer, 1940. California.
robusta Baker, 1898. Colorado, Montana, Nebraska, North Dakota, Wyoming, Canada.
montana Osborn, 1930.
rostrata Ball and Beamer, 1940. California.
salsa Ball and Beamer, 1940. Kansas, Texas, Mexico.
strobila Blocker, n. sp. California, Idaho, Nevada, Oregon.
stylosa Blocker, n. sp. New Mexico.
supina Ball and Beamer, 1940. Texas.
tenera Ball and Beamer, 1940. Nevada.
terebrans (Gillette and Baker), 1895. Colorado, Montana, North Dakota, Nebraska, Utah, Wyoming, Canada.
utahna Osborn, 1930. Arizona, California, Colorado, Idaho, Nevada, Utah, Oregon, Washington, Canada, Mexico.
vaticala Blocker, n. sp. Nebraska, North Dakota.
whitcombi Blocker, n. sp. Nevada.
yumana Osborn, 1930. Arizona, California.

Key to *Athysanella* Males, sensu stricto

1. Style rounded apically; pygofer variable; plates embrowned apically 2
- Style widened, usually bifid apically; pygofer usually broadly rounded apically; plates variable 5
- 2(1). Pygofer extended apically; connective, plates, and vertex variable 3
- Pygofer truncate apically; connective shorter than style; plates truncate apically; vertex usually with fuscous spots *gardenia* Osborn
- 3(2). Aedeagus with basal process, unique; plates truncate apically; connective as long as style; vertex without fuscous spots *robusta* Baker
- Aedeagus simple or with ventral serrations; connective shorter than style; vertex usually with fuscous spots 4
- 4(3). Aedeagus with shaft simple, elongate; plates rounded apically, embrowned .. *pastora*, n. sp.
- Aedeagus with shaft shortened, expanded and serrate ventrally; plates truncate apically ... *globosa* Ball & Beamer

- 5(1). Aedeagus with conspicuous apical hook; style exceeding apex of plate; vertex with or without fuscous spots 6
- Aedeagus with poorly developed or no apical hook (apical serrated flanges may be present); style variable; vertex with or without fuscous spots 22
- 6(5). Aedeagus with single apical hook 7
- Aedeagus with semicircular apical hook 20
- 7(6). Aedeagus not widest basally (may have crests at midlength), not tapered apically; plates rounded apically; vertex with or without fuscous spots 14
- Aedeagus widest in basal 1/2, shaft tapered in apical 1/2, apical hook conspicuous; plates usually truncate apically; vertex with or without fuscous spots 8
- 8(7). Aedeagus with distinct lateral tubercles at base of shaft; style with ventral apical arm widened, dorsal arm slender; vertex without fuscous spots *planata* Ball & Beamer
- Aedeagus without distinct tubercles; style with ventral and dorsal arms variable; vertex with or without spots 9
- 9(8). Style without apical lateral flange, dorsal arm short, wide; plates rounded apically *krameri*, n. sp.
- Style with distinct apical lateral flange or ventral arm expanded laterally, dorsal arm variable, elongate; plates truncate apically 10
- 10(9). Aedeagus with apex of dorsal apodeme expanded; style with dorsal arm elongate 11
- Aedeagus with dorsal apodeme rounded; style variable 12
- 11(10). Style with dorsal arm slender; vertex with no fuscous spots; smaller in overall size *whitcombi*, n. sp.
- Style with dorsal arm more robust; vertex usually with fuscous spots; larger in size *plana* Ball & Beamer
- 12(10). Aedeagus with shaft robust, short; style with dorsal apical arm longer, variable apically .. 13
- Aedeagus with shaft less robust; style with dorsal arm rounded apically *aspera* Ball & Beamer
- 13(12). Style with dorsal arm bulbous apically; aedeagus with apical hook conspicuous, with slight processes at base *aphoda*, n. sp.
- Style with dorsal arm acute apically; aedeagus with apical hook less developed, no process at base *strobila*, n. sp.
- 14(7). Style bifid apically; aedeagus with apical hook short; vertex with or without fuscous spots .. 15
- Styles not bifid apically or dorsal arm elongate; aedeagus with apical hook variable; vertex with or without fuscous spots 17
- 15(14). Aedeagus short, shaft serrate ventrally, widest at midlength; style without distinct lateral apical flange; vertex without fuscous spots *supina* Ball & Beamer

- Aedeagus longer, shaft not serrate or widened; style variable; vertex with or without fuscous spots 16
- 16(15). Style with conspicuous apical lateral flange; vertex without fuscous spots *foeda* Ball & Beamer
- Style without apical lateral flange; vertex with fuscous spots *parca* Ball & Beamer
- 17(14). Style with dorsal arm elongate; vertex without fuscous spots *rostrata* Ball & Beamer
- Style without elongate dorsal arm; vertex usually with fuscous spots 18
- 18(17). Aedeagus with shaft shortened, widest in apical 1/2, apical hook short; style with conspicuous lateral flange 19
- Aedeagus with shaft longer, not widest in apical 1/2, apical hook longer; style without lateral flange *fredonia* Ball & Beamer
- 19(18). Aedeagus with pronounced keels on ventral margin of shaft, shorter; hind tibial spur 1/2 1st tarsomere; from SW *cursa*, n. sp.
- Aedeagus without pronounced keels on shaft, longer; hind tibial spur longer; from California (east face of Sierras) *hemijona*, n. sp.
- 20(6). Style with apical dorsal arm truncate; vertex commonly with fuscous spots; plates rounded apically *incerta* Ball & Beamer
- Style with apical dorsal arm rounded or acute; vertex usually without fuscous spots; plates variable 21
- 21(20). Plates rounded apically; style with ventral apical arm thickened, well developed *kadokana* Knoll
- Plates truncate apically; style with apical lateral flange; ventral apical arm not as well developed; vertex occasionally with fuscous spots *salsa* Ball & Beamer
- 22(5). Vertex usually without fuscous spots; aedeagus with serrated ventral margin; plates not elongate 23
- Vertex usually with fuscous spots, or if absent, then aedeagus without ventral serrations; plates may be elongate 29
- 23(22). Style distinctly bifid apically; connective shorter than style; aedeagus without apical crests on shaft 25
- Style with only dorsal arm developed; connective variable in length; aedeagus with crests on shaft 24
- 24(23). Aedeagus with apical crests on shaft; connective equal to style in length; vertex occasionally with fuscous spots *kanabana* Ball & Beamer
- Aedeagus with medial crests on shaft; connective shorter than style; vertex without spots *furnaca*, n. sp.
- 25(23). Style with apical lateral flange, apical arms equal in length; aedeagus with shaft elongate 26
- Style without flange, dorsal arm longer; aedeagus with shaft shortened, acute apically 27
- 26(25). Style with conspicuous lateral flange; plates short, truncate apically; vertex length less than interocular width *marthae*, n. sp.
- Style with lateral flange smaller; plates rounded apically, vertex length may equal interocular width *bifida* Ball & Beamer
- 27(25). Style conspicuously bifid, dorsal arm slender, tapered *utahna* Osborn
- Style less bifid, dorsal arm robust 28
- 28(27). Style with dorsal arm acute apically; vertex occasionally with spots *yumana* Osborn
- Style with dorsal arm bulbous apically; vertex without spots *deserta*, n. sp.
- 29(22). Tibial spur 2/3 length of 1st tarsomere; plates elongate, acute apically, exceeding apex of styles; outer arm of style acute apically *magdalena* Baker
- Tibial spur variable; plates shorter; style equal to or exceeding apex of plate, outer arm variable 30
- 30(29). Style with dorsal arm acute apically 31
- Style with dorsal arm rounded or truncate .. 32
- 31(30). Aedeagus with shaft approximately 1 1/2X length of dorsal apodeme, with minute serrations on ventral margin ... *laeta* Ball & Beamer
- Aedeagus with shaft 2X length of dorsal apodeme, with conspicuous serrations on ventral margin *stylosa*, n. sp.
- 32(30). Style with outer arm rounded; aedeagus with shaft only slightly widened or tapered in apical 1/2, ventral margin with or without serrations 33
- Style with outer arm truncate; aedeagus with shaft widest in apical 1/2, ventral margin not serrated *incongrua* Baker
- 33(32). Aedeagus with shaft short, widest at mid-length; style with large lateral apical flange *tenera* Ball & Beamer
- Aedeagus with shaft longer, even-margined or slightly enlarged apically; style without conspicuous flange 34
- 34(33). Style deeply bifid apically, ventral arm widened, dorsal arm even-margined; aedeagus with shaft slightly widened apically *vaticala*, n. sp.
- Style less bifid, with inconspicuous apical lateral flange, dorsal arm tapered; aedeagus with shaft even-margined *terebrans* (Gillette & Baker)

Characters Used in Character Code

- Character 1. 0 = no fuscous spots on vertex.
1 = fuscous spots may be present.
- Character 2. 0 = hind tibial spur 1/2 1st tarsomere or less.
1 = spur approximately length of 1st tarsomere.

- Character 3. 0 = ocellus approximately its diameter from eye.
1 = ocellus more remote.
- Character 4. 0 = male plates unicolorous.
1 = male plates embrowned apically.
- Character 5. 0 = male plates elongate.
1 = male plates rounded apically.
2 = male plates truncate apically.
- Character 6. 0 = male pygofer with caudal margin rounded.
1 = male pygofer with caudal margin extended.
- Character 7. 0 = anal tube not reaching pygofer apex.
1 = anal tube equal to or exceeding pygofer apex.
- Character 8. 0 = male pygofer not embrowned.
1 = male pygofer embrowned caudoventrally.
- Character 9. 0 = male plates exceeding apex of pygofer.
1 = male plates equal to apex of pygofer.
2 = male plates not reaching apex of pygofer.
- Character 10. 0 = styles not reaching apex of pygofer.
1 = styles equal to apex of pygofer.
2 = styles exceed apex of pygofer.
- Character 11. 0 = styles not reaching apex of plates.
1 = styles equal to apex of plates.
2 = styles exceed apex of plates.
- Character 12. 0 = styles without lateral flange.
1 = styles with lateral flange.
2 = styles with ventral arm thickened.
- Character 13. 0 = connective shorter than style.
1 = connective as long as or longer than style.
- Character 14. 0 = aedeagus with caudal surface smooth.
1 = aedeagus with caudal surface troughlike.
- Character 15. 0 = shaft of aedeagus flared in caudal aspect.
1 = shaft even-margined in caudal aspect.
- Character 16. 0 = aedeagus with no basal processes on shaft.
1 = shaft with basal processes.
- Character 17. 0 = aedeagus with caudal margin of shaft smooth.
1 = caudal margin serrate.
- Character 18. 0 = aedeagus with dorsal apodeme simple.
1 = dorsal apodeme enclosing shaft basally.

Athysanella gardenia Osborn

Figs. 1-5

Athysanella gardenia Osborn 1930:701.

Gladionura frigida Osborn 1930:709.

Length of male 2.5 to 2.9 mm, female 3.2 to 3.4 mm; head width of male 1.0 to 1.05 mm, female 1.05 to 1.15 mm; pronotal width of male 0.95 to 1.05 mm, female 1.0 to 1.1 mm; interocular width of male 0.45 to 0.55 mm,

female 0.5 to 0.55 mm; vertex length of male 0.35 to 0.4 mm, female 0.35 to 0.45 mm; pronotal length of male 0.3 to 0.4 mm, female 0.3 to 0.35 mm. Vertex length 0.76 to 0.8 interocular width; pronotal length 0.85 to 0.88 vertex length.

Character code: 1-1-1-1-2-0-0-0-2-1-2-0-0-1-0-0-0.

Lectotype, male (No. 43183), and lectoallotype, female (No. 43183), from Garden of the Gods, Colorado, (Webster) No. 7104, in USNM.

This species is related to *pastora* but can be distinguished by the apex of the style, which is narrowed (Fig. 2), and the posterior margin of the plate, which is embrowned and has a median projection. The style occasionally has macrosetae; long-winged specimens have been observed. This species has been collected in Colorado and Wyoming.

Athysanella robusta Baker

Figs. 6-9

Athysanella robusta Baker 1898:187.

Athysanella montana Osborn 1930:700.

Length of male 2.3 to 3.1 mm, female 3.4 to 3.7 mm; head width of male 0.95 to 1.15 mm, female 1.05 to 1.15 mm; pronotal width of male 0.9 to 1.15 mm, female 1.05 to 1.15 mm; interocular width of male 0.4 to 0.55 mm, female 0.5 to 0.55 mm; vertex length of male 0.35 to 0.5 mm, female 0.4 to 0.5 mm; pronotal length of male 0.3 to 0.4 mm, female 0.35 to 0.4 mm. Vertex length 0.8 to 0.9 interocular width; pronotal length 0.76 to 0.88 vertex width.

Character code: 0-0-1-1-2-1-1-0-2-0-2-0-1-0-0-1-0-0.

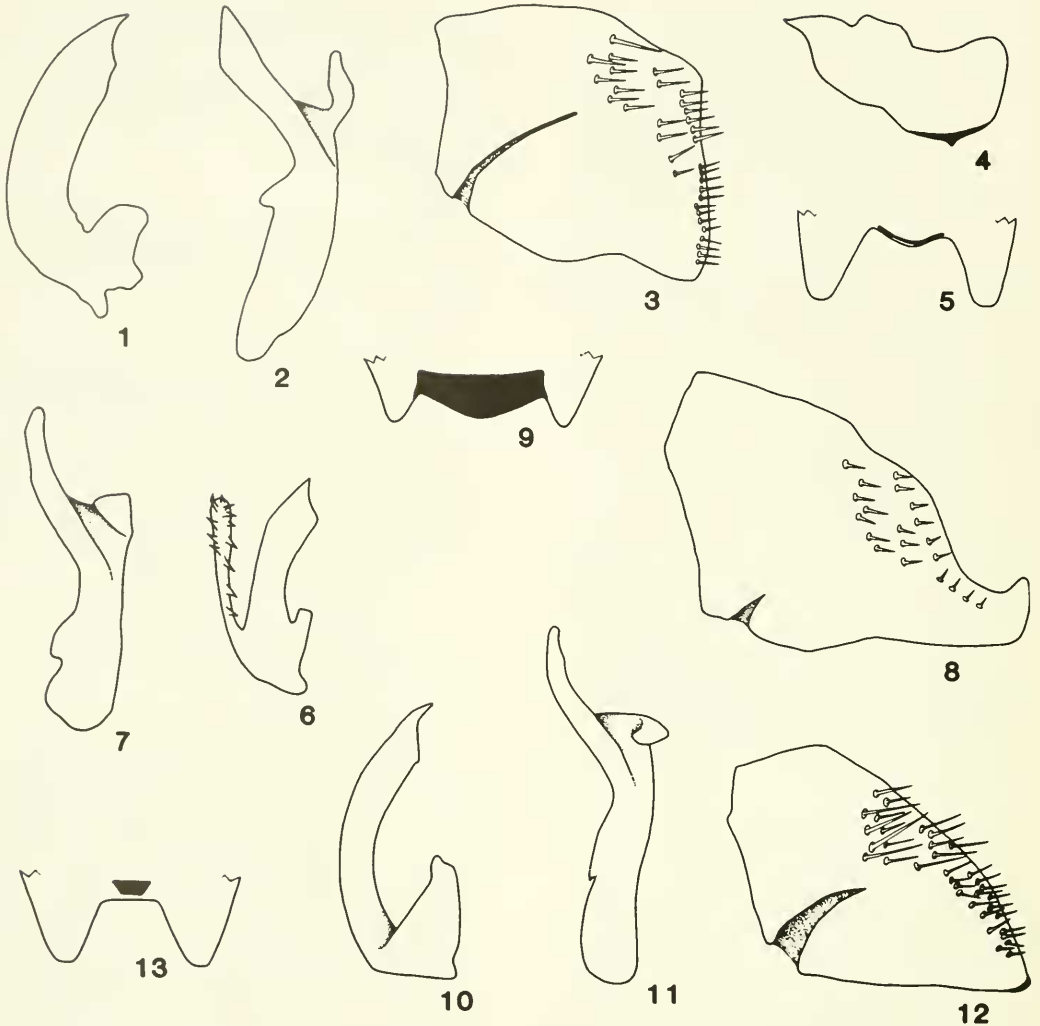
The type of this species has not been studied; identification is based on determined material from various collections and the literature.

Athysanella robusta is related to *pastora* but can be separated by the unique shape of the aedeagus (Fig. 6), the pronotum nearly as wide as the head, and the connective, which is as long as the style. There are no fuscous spots on the vertex of this species. It has been collected in Colorado, Montana, Nebraska, North Dakota, Wyoming, and Canada.

Athysanella pastora Blocker, n. sp.

Figs. 10-13

Length of male 2.5 to 2.7 mm, female 3.6 to



Figs. 1-13. Figs. 1-5. *Athysanella gardenia*: 1, aedeagus, lateral view; 2, style, broad aspect; 3, pygofer, lateral view; 4, plate, ventral view; 5, female sternum VII, ventral view. Figs. 6-9. *Athysanella robusta*: 6, aedeagus, lateral view; 7, style, broad aspect; 8, pygofer, lateral view; 9, female sternum VII, ventral view. Figs. 10-13. *Athysanella pastora*: 10, aedeagus, lateral view; 11, style, broad aspect; 12, pygofer, lateral view; 13, female sternum VII, ventral view.

3.9 mm; head width of male 1.05 to 1.15 mm, female 1.2 to 1.25 mm; pronotal width of male 0.9 to 1.0 mm, female 1.05 to 1.15 mm; interocular width of male 0.4 to 0.5 mm, female 0.5 to 0.6 mm; vertex length of male 0.35 to 0.45 mm, female 0.45 to 0.5 mm; pronotal length of male 0.3 to 0.4 mm, female 0.35 to 0.4 mm. Vertex length 0.84 to 0.95 interocular width; pronotal length 0.76 to 0.94 vertex length.

Character code: 1-1-0-1-1-1-0-1-1-2-2-0-0-0-0-0-0.

Color stramineous; vertex with fuscous

spots; vertex, pronotum, and abdomen with additional, conspicuous brown pattern; forewings commonly with darkened stripes; face with lateral fuscous marks; legs with various amounts of fuscous coloring.

Forewings brachypterous, exposing 3 to 4 pregenital abdominal terga; ocellus approximately 1.5 its diameter from eye; hind tibial spur $\frac{3}{4}$ length of 1st tarsomere; female abdominal sternum VII (Fig. 13) variable but hind margin usually with conspicuous lateral lobes, medial third truncate or rounded, variously embrowned.

Pygofer with caudal margin extended, slightly embrowned on caudoventral border, densely set with macrosetae (25+); anal tube attains apex of pygofer; valve with caudal margin rounded; plates rounded and conspicuously embrowned apically, slightly separated at base; connective 2/3 or less length of style; styles rounded apically, with conspicuous preapical lobe, apex slightly exceeding apex of plates; aedeagus with shaft simple, slightly enlarged apically, elongate, with dorsal apodeme slightly overlapping base of shaft.

Holotype, male, from Chaves Co., New Mexico, Bitter Lake NWR, 14 Aug 1984 (R. F. Whitcomb); 4 male and 8 female paratypes, same data. Holotype and paratypes in USNM; paratypes in IPL and KSU.

Athysanella pastora is related to *robusta* and *globosa* but can be separated from the former by the absence of an aedeagal process. It can be separated from *globosa* by the shape of the apex of the style, which is not widened (Fig. 11), and by the shaft of the aedeagus (Fig. 10), which is elongate and not serrated. This species has been collected only on gypsum, *Bouteloua brevisetia*, in gypsum flats of southeastern New Mexico.

Athysanella globosa Ball & Beamer
Figs. 14–15

Athysanella globosa Ball & Beamer 1940:18.

Length of male 2.9 mm; head width 1.2 mm; pronotal width 1.1 mm; interocular width 0.45 mm; vertex length 0.35 mm; pronotal length 0.4 mm. Vertex length 0.78 interocular width; pronotal length 1.07 vertex length. Female unknown.

Character code: 1-0-1-1-2-1-1-0-1-1-1-0-0-1-0-0-1-0.

Holotype, male, from Grand Canyon, Arizona, 4 Aug 1930 (E. D. Ball) in USNM. Male and female paratypes, same data, at KU.

Athysanella globosa is related to *gardenia* but can be separated by the shape of the shaft of the aedeagus, which is serrate at midlength (Fig. 14). Female paratypes examined are doubtfully conspecific with the male. This species is known only from its type locality in Arizona; a specimen from Utah is assigned to this species but may represent a new species.

Athysanella planata Ball & Beamer
Figs. 16–18

Athysanella planata Ball & Beamer 1940:24.

Length of male 2.6 to 2.7 mm, female 3.4 to 4.0 mm; head width of male 1.0 to 1.05 mm, female 1.1 to 1.15 mm; pronotal width of male 0.9 to 1.0 mm, female 1.0 to 1.1 mm; interocular width of male 0.35 to 0.4 mm, female 0.4 to 0.5 mm; vertex length of male 0.35 mm to 0.4 mm, female 0.4 to 0.45 mm; pronotal length of male 0.3 to 0.35 mm, female 0.3 to 0.35 mm. Vertex length 0.87 to 1.0 interocular width; pronotal length 0.8 to 0.86 vertex length.

Character code: 0-1-0-0-1-0-0-0-1-1-1-2-0-0-0-0-0-0.

Holotype, male, and allotype, female, from Newberry Springs, California, 30 July 1936 (D. R. Lindsay and R. H. Beamer) in KU.

Athysanella planata is related to *krameri* but can be separated by the presence of processes on the base of the shaft of the aedeagus (Fig. 16), a more slender apical arm of the style (Fig. 17), and the absence of fuscous spots on the vertex. This species has been collected only from the type locality in California.

Athysanella krameri Blocker, n. sp.
Figs. 19–21

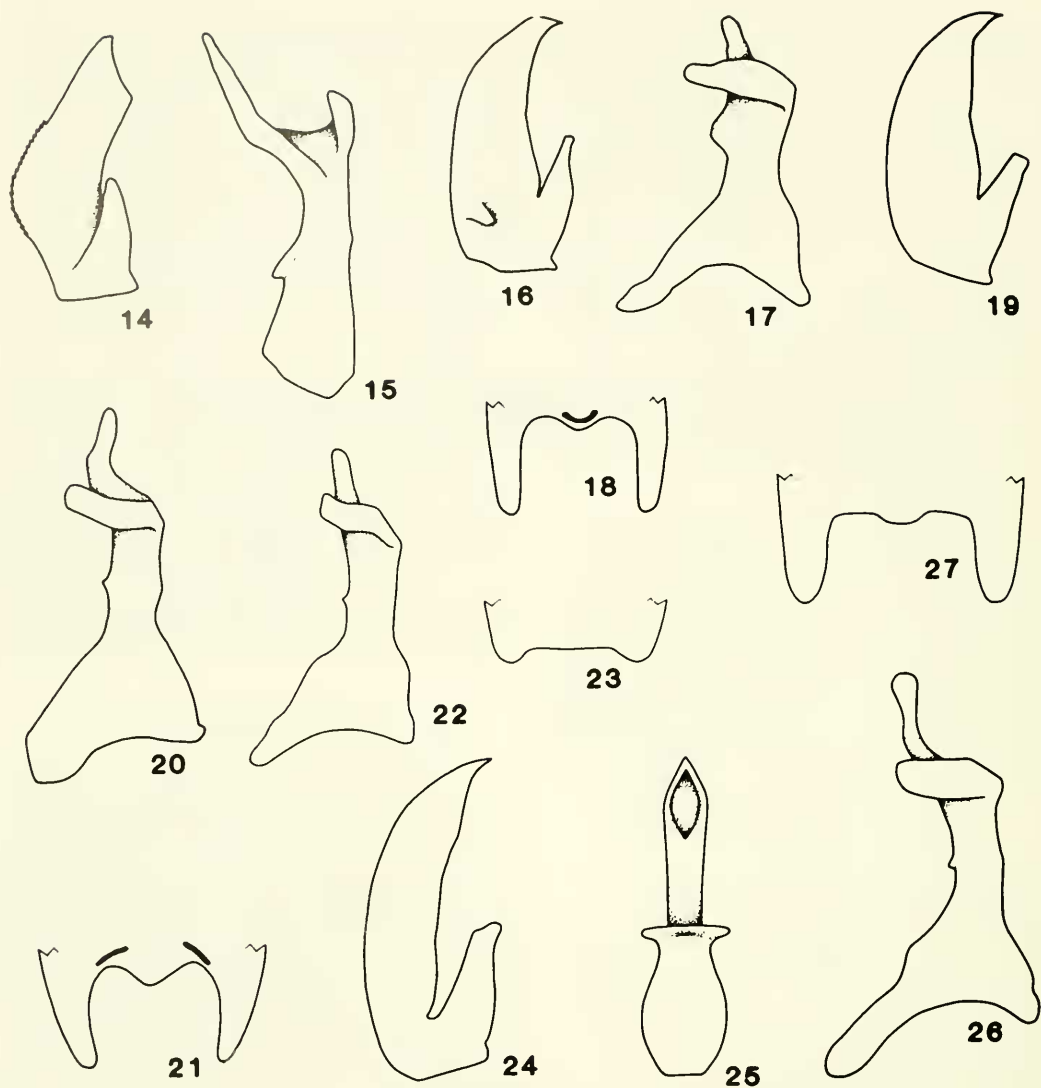
Length of male 3.0 to 3.1 mm, female 4.4 to 4.7 mm; head width of male 1.05 to 1.15 mm, female 1.2 to 1.25 mm; pronotal width of male 1.0 to 1.1 mm, female 1.1 to 1.2 mm; interocular width of male 0.45 to 0.5 mm, female 0.55 to 0.6 mm; vertex length of male 0.35 to 0.45 mm, female 0.45 to 0.5 mm; pronotal length of male 0.3 to 0.35 mm, female 0.35 to 0.4 mm. Vertex length 0.83 to 0.95 interocular width; pronotal length 0.77 to 0.87 vertex length.

Character code: 1-1-0-0-1-1-0-0-2-1-2-0-0-0-0-0-0-0.

Color stramineous; vertex commonly with fuscous spots, often with orange dashes; male pygofer commonly with conspicuous fuscous spot; remainder of body mostly unicolorous; female without fuscous spots on vertex.

Forewings brachypterous, exposing 3.5 to 4.5 pregenital abdominal terga; ocellus 1.5 its diameter (or less) from eye; hind tibial spur approximately 3/4 length of 1st tarsomere; female abdominal sternum VII (Fig. 21) with elongate lateral lobes and rounded medial lobe on hind margin.

Pygofer rounded apically, with about 20 macrosetae; valve rounded on apical margin; plates rounded apically, slightly separated or touching at base; connective less than 3/4



Figs. 14-27. Figs. 14-15. *Athysanella globosa*: 14, aedeagus, lateral view; 15, style, broad aspect. Figs. 16-18. *Athysanella planata*: 16, aedeagus, lateral view; 17, style, broad aspect; 18, female sternum VII, ventral view. Figs. 19-21. *Athysanella krameri*: 19, aedeagus, lateral aspect; 20, style, broad aspect; 21, female sternum VII, ventral view. Figs. 22-23. *Athysanella whitcombi*: 22, style, broad aspect; 23, female sternum VII, ventral view. Figs. 24-27. *Athysanella plana*: 24, aedeagus, lateral view; 25, aedeagus, anterodorsal view; 26, style, broad aspect; 27, female sternum VII, ventral view.

length of style; styles (Fig. 20) bifid apically, dorsal arm short, robust, no preapical lobe, exceeding apex of plates, equal to apex of pygofer; aedeagus (Fig. 19) with shaft short, widest basally, and tapered to acute apical hook.

Holotype, male, from Little Lake, Inyo Co., California, 7 June 1929 (E. P. Van Duzee); 5 male and 6 female paratypes, same

data; 3 males from Olancha, Inyo Co., 8 June 1929; 1 male from Lone Pine, Inyo Co., 10 June 1929. Holotype and paratypes in CAS, paratypes in KSU.

Athysanella krameri is related to *planata* but can be separated by the absence of projections at the base of the aedeagus and the dorsal arm of the style, which is shorter and more robust. An undeveloped male specimen has

been observed. This species is known only from the above localities in California.

Athysanella whitcombi Blocker, n. sp.

Figs. 22–23

Length of male 2.6 mm, female 4.0 mm; head width of male 1.0 mm, female 1.15 to 1.2 mm; pronotal width of male 0.9 mm, female 1.0 to 1.05 mm; interocular width of male 0.4 mm, female 0.55 to 0.6 mm; vertex length of male 0.35 to 0.4 mm, female 0.5 mm; pronotal length of male 0.25 to 0.3 mm, female 0.45 mm. Vertex length 0.93 to 0.94 interocular width; pronotal length 0.73 to 0.74 vertex length.

Character code: 0-1-1-0-1-0-0-0-1-1-1-1-0-0-0-0-0-1.

Color stramineous; vertex without fuscous spots; body virtually unicolorous.

Forewings of male brachypterous, exposing 4.5 pregenital abdominal terga; ocellus approximately 2X its diameter from eye; hind tibial spur about 1/2 length of 1st tarsomere; female abdominal sternum VII with lateral lobes, without medial lobe on caudal margin.

Pygofer rounded, with about 20 macrosetae; valve rounded on caudal margin; plates rounded apically, touching at base then divergent apically; connective 3/4 length of style; styles bifid apically, dorsal arm slender, no preapical lobe, exceeding apex of plates, equal to apex of pygofer; aedeagus with shaft and dorsal apodeme as *plana*.

Holotype, male, from Austin, Nevada, 12 Aug 1940 (D. E. Hardy) and a long-winged female paratype, same data, in KU.

Athysanella whitcombi is related to *plana* but can be separated by its smaller size, the absence of fuscous spots on the vertex, and the more slender dorsal apical arm of the style. This species is named for R. F. Whitcomb, who has made numerous contributions to this research; it has been collected in Nevada.

Athysanella plana Ball & Beamer

Figs. 24–27

Athysanella plana Ball & Beamer 1940:13.

Length of male 3.0 to 3.3 mm, female 4.5 to 4.7 mm; head width of male 1.05 to 1.15 mm, female 1.2 to 1.25 mm; pronotal width of male 1.0 to 1.05 mm, female 1.15 to 1.2 mm; interocular width of male 0.45 to 0.5 mm, female 0.55 to 0.6 mm; vertex length of male 0.4 to 0.45 mm, female 0.45 to 0.5 mm; pronotal

length of male 0.3 to 0.4 mm, female 0.35 to 0.4 mm. Vertex length 0.89 to 0.95 interocular width; pronotal length 0.77 to 0.82 vertex length.

Character code: 1-1-1-0-2-0-0-0-1-1-1-1-0-0-0-0-0-0.

Holotype, male, and allotype, female, from Califa, California, 12 June 1935 (P. W. Oman) in USNM; paratypes in USNM.

Athysanella plana is related to *aspera* but can be separated by the expanded base of the dorsal apodeme of the aedeagus (Fig. 25) and the longer dorsal apical arm of the style (Fig. 26). This species has been collected only from the Central Valley (Fresno Co.) of California.

Athysanella aspera Ball & Beamer

Figs. 28–30

Athysanella aspera Ball & Beamer 1940:17.

Length of male 2.5 to 3.1 mm, female 4.3 to 5.0 mm; head width of male 0.95 to 1.15 mm, female 1.15 to 1.3 mm; pronotal width of male 0.9 to 1.1 mm, female 1.1 to 1.25 mm; interocular width of male 0.4 to 0.5 mm, female 0.45 to 0.5 mm; vertex length of male 0.35 to 0.45 mm, female 0.4 to 0.5 mm; pronotal length of male 0.3 to 0.4 mm, female 0.35 to 0.45 mm. Vertex length 0.8 to 0.95 interocular width; pronotal length 0.76 to 0.93 vertex length.

Character code: 1-1-1-0-2-1-0-0-2-1-2-1-0-0-0-0-0-0.

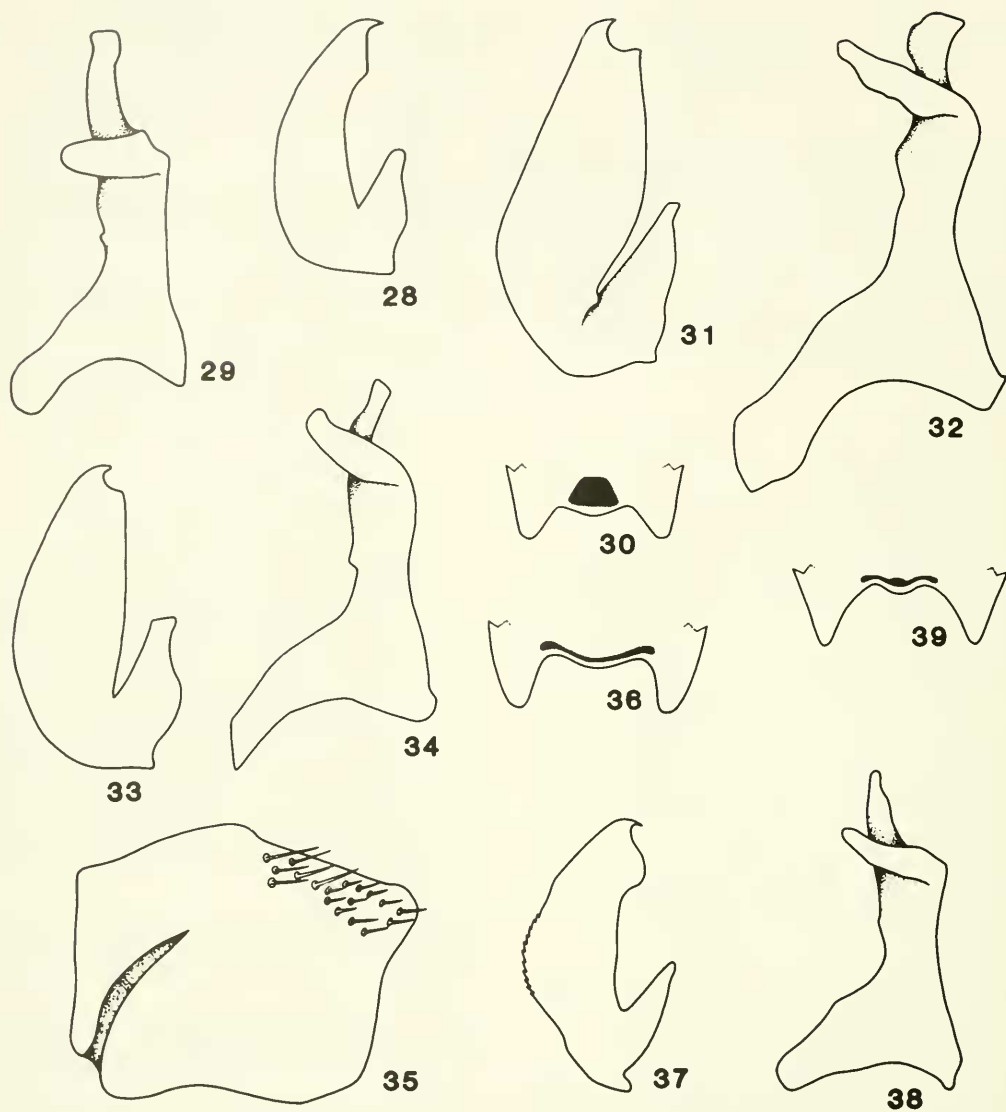
Holotype, male, and allotype, female, from Mojave, California, 1 July 1931 (E. D. Ball) in USNM.

Athysanella aspera is related to *plana* but can be separated by the apex of the style, which has a shorter dorsal arm (Fig. 29), and the dorsal apodeme of the aedeagus, which is not widened apically. In one specimen, the vertex length equaled the interocular width. The shaft of the aedeagus has an indistinct pair of basal tubercles similar to *planata*. A male specimen parasitized by Pipunculidae and specimens with undeveloped genitalia have been observed. This species has been collected from the Mojave Desert in California.

Athysanella aphoda Blocker, n. sp.

Figs. 31–32

Length of male 3.5 mm; head width 1.2 mm; pronotal width 1.1 mm; interocular width 0.5 mm; vertex length 0.45 mm; pronotal length 0.4 mm; female unknown. Vertex 0.9 interocular width; pronotal length 0.83 to



Figs. 28-39. Figs. 28-30. *Athysanella aspera*: 28, aedeagus, lateral view; 29, style, broad aspect; 30, female sternum VII, ventral view. Figs. 31-32. *Athysanella aphoda*: 31, aedeagus, lateral view; 32, style, broad aspect. Figs. 33-36. *Athysanella strobila*: 33, aedeagus, lateral view; 34, style, broad aspect; 35, pygofer, lateral aspect; 36, female sternum VII, ventral view. Figs. 37-39. *Athysanella supina*: 37, aedeagus, lateral view; 38, style, broad aspect; 39, female sternum VII, ventral view.

0.84 vertex length. Female unknown.

Character code: 1-0-1-0-2-0-1-0-2-1-2-2-0-0-0-1-0-0.

Color stramineous; vertex and pronotum with distinct, darker pattern; forewings with dark stripes; face with distinct lateral arcs; legs with slight fuscous coloring.

Forewings brachypterous, exposing 3.5 pregenital abdominal terga; ocellus approxi-

mately its diameter from eye; hind tibial spur slightly shorter than 1st tarsomere.

Pygofer as *strobila* but larger; valve rounded posteriorly; plates truncate apically; styles (Fig. 32) with dorsal arm bulbous apically; aedeagus (Fig. 31) with apical hook more distinct than *strobila*, shaft with indistinct, small process at base.

Holotype, male, from Lander Co., Nevada,

30 mi N Austin, 24 July 1986 (H. D. Blocker) in KSU.

Athysanella aphoda is closely related to and possibly conspecific with *strobila* but can be readily separated by its larger size, the bulbous apex of the dorsal arm of the style, and the more robust aedeagus, which has a more pronounced apical hook. This species is represented by the holotype from Nevada.

Athysanella strobila Blocker, n. sp.

Figs. 33–36

Length of male 2.6 to 3.9 mm, female 4.2 to 5.3 mm; head width of male 1.05 to 1.3 mm, female 1.15 to 1.35 mm; pronotal width of male 0.95 to 1.25 mm, female 1.05 to 1.3 mm; interocular width of male 0.4 to 0.55 mm, female 0.45 to 0.65 mm; vertex length of male 0.4 to 0.55 mm, female 0.45 to 0.65 mm; pronotal length of male 0.3 to 0.4 mm, female 0.3 to 0.45 mm. Vertex length 0.89 to 1.0 interocular width; pronotal length 0.7 to 0.82 vertex length.

Character code: 0-1-0-0-2-0-0-0-2-1-2-2-0-1-0-0-0-0.

Color stramineous, occasionally patterned; vertex without fuscous spots; abdomen occasionally with some darker pattern; other body areas occasionally with irregular, brown pattern.

Forewings brachypterous, exposing 3.0 to 4.5 pregenital abdominal terga; ocellus approximately its diameter from eye; hind tibial spur 3/4 length of 1st tarsomere; female abdominal sternum VII (Fig. 36) with conspicuous lateral lobes on posterior margin, with a broadly rounded medial lobe.

Pygofer rounded on caudoventral margin, with a distinct lobe (Fig. 35), with 15 or fewer macrosetae; valve rounded posteriorly; plates truncate apically, nearly touching basally, then diverging; connective 3/4 length of style; styles bifid (Fig. 34) apically, with ventral arm thickened, exceeding apex of plates, equal to apex of pygofer; aedeagus with shaft short, widest in proximal 1/2, slightly tapered in apical 1/2 to a single apical hook.

Holotype, male, from Lone Pine, California, 28 July 1940 (R. H. Beamer); 4 male and 3 female paratypes, same data; male and female, Fallon, Nevada, 12 Aug 1940 (L. C. Kuitert); 2 males and 8 females, New Humboldt Co., Nevada, 7 mi W Denio, 23 June 1971 (Oman); 6 males and 3 females, Eureka

Co., Nevada, W. Eureka, 25 July, 1986 (H. D. Blocker); male and female, Lander Co., Nevada, 5 mi W Austin, 24 July 1986 (H. D. Blocker); male, Owyhee Co., Idaho, 10 mi W Bruneau, 9 July 1981 (H. D. Blocker, J. W. Johnson); numerous specimens from Albert Lake, Oregon, 5 mi N Valley Falls, 18 May 1969 (Oman), and 6 mi N Silver Lake, Oregon, 17 May 1969 (Oman). Holotype and paratypes in KU; paratypes in KSU and OrSU.

Athysanella strobila is closely related to *aspera* but can be separated by the shape of the shaft of the aedeagus, which is more robust and shorter, and by the dorsal apical arm of the style, which is longer and acute apically. It can be recognized by the unique lobe on the caudal margin of the pygofer. An undeveloped female specimen has been examined. This species has been collected in California, Idaho, Nevada, and Oregon.

Athysanella supina Ball & Beamer

Figs. 37–39

Athysanella supina Ball & Beamer 1940:22.

Length of male 2.8 to 3.2 mm, female 4.3 to 4.6 mm; head width of male 1.0 to 1.1 mm, female 1.15 to 1.25 mm; pronotal width of male 1.0 to 1.05 mm, female 1.1 to 1.2 mm; interocular width of male 0.45 to 0.5 mm, female 0.55 to 0.6 mm; vertex length of male 0.45 to 0.55 mm, female 0.5 to 0.6 mm; pronotal length of male 0.35 to 0.4 mm, female 0.35 to 0.45 mm. Vertex length 1.0 to 1.15 interocular width; pronotal length 0.68 to 0.75 vertex length.

Character code: 1-1-1-0-1-0-0-0-2-1-2-1-0-1-0-0-1-0.

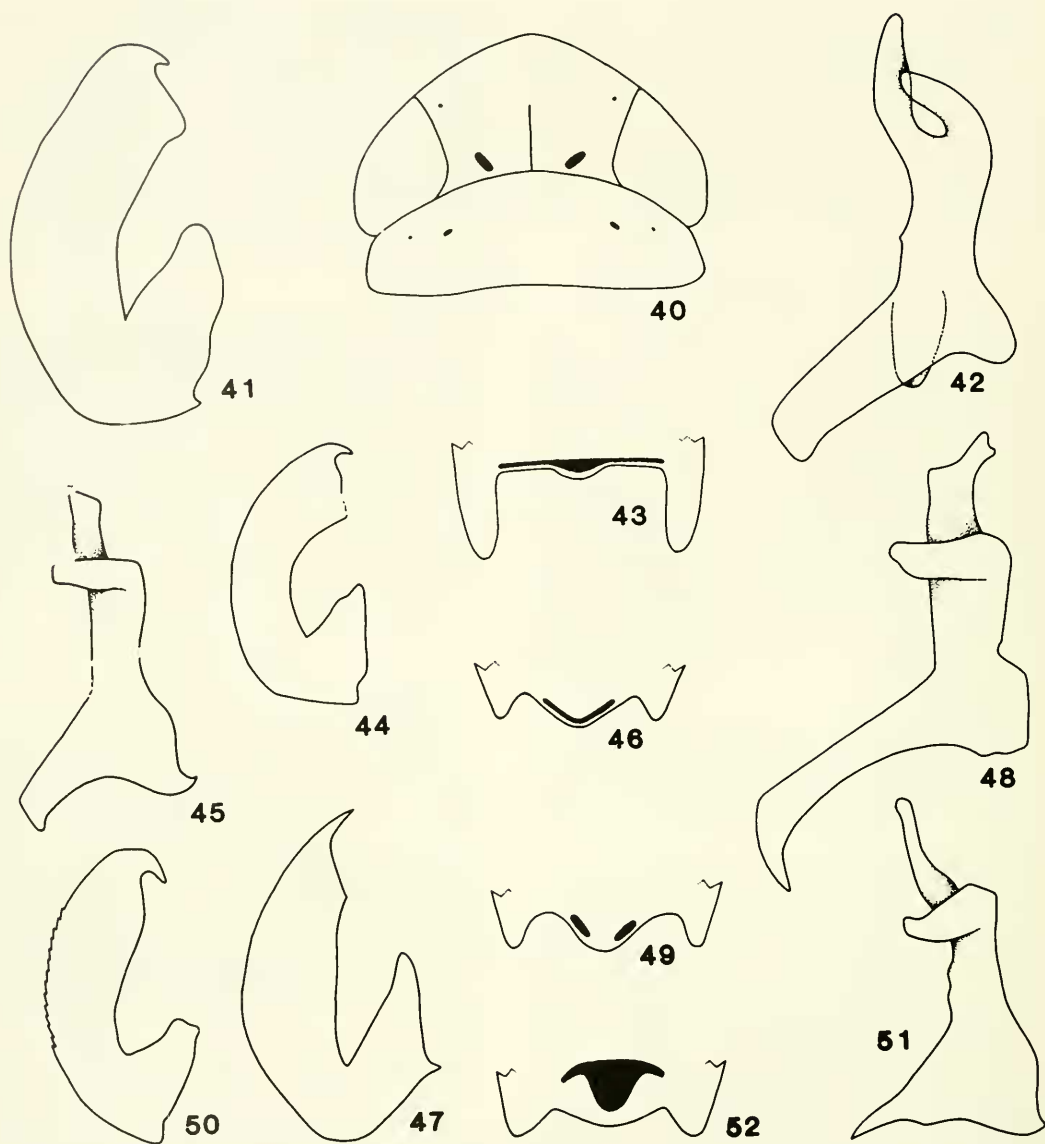
Holotype, male, and allotype, female, from Boca Chica, Texas, 30 May 1933 (P. W. Oman) in USNM; paratypes in USNM and KU.

Athysanella supina is related to *fredonia* but can be separated by the shaft of the aedeagus, which has a shorter crest on the ventral margin (Fig. 37), and the shape of the apex of the style, which is more bifid (Fig. 38). This species, described from Texas, has recently been collected there (A. L. Hicks) from shoregrass, *Monathochloe littoralis*.

Athysanella foeda Ball & Beamer

Figs. 40–43

Athysanella foeda Ball & Beamer 1940:19.



Figs. 40-52. Figs. 40-43. *Athysanella foeda*: 40, head and prothorax, dorsal view; 41, aedeagus, lateral view; 42, style, broad aspect; 43, female sternum VII, ventral view. Figs. 44-46. *Athysanella parca*: 44, aedeagus, lateral view; 45, style, broad aspect; 46, female sternum VII, ventral view. Figs. 47-49. *Athysanella rostrata*: 47, aedeagus, lateral view; 48, style, broad aspect; 49, female sternum VII, ventral aspect. Figs. 50-52. *Athysanella fredonia*: 50, aedeagus, lateral view; 51, style, broad aspect; 52, female sternum VII, ventral view.

Length of male 3.4 to 3.6 mm, female 4.9 to 5.1 mm; head width of male 1.2 to 1.3 mm, female 1.4 to 1.5 mm; pronotal width of male 1.2 to 1.3 mm, female 1.35 to 1.4 mm; interocular width of male 0.55 to 0.6 mm, female 0.65 to 0.75 mm; vertex length of male 0.5 to 0.55 mm, female 0.55 to 0.6 mm; pronotal length of

male 0.4 to 0.45 mm, female 0.4 to 0.45 mm. Vertex length 0.83 to 0.88 interocular width; pronotal length 0.76 to 0.85 vertex length.

Character code: 0-1-1-0-1-0-0-0-1-2-2-1-0-1-0-0-0-1.

Holotype, male, and allotype, female, from Laramie, Wyoming, 23 June 1935 (R. H. and

J. Beamer) in KU; paratypes in KU.

Athysanella foeda is related to *parca* but can be separated by its larger size and the presence of a conspicuous lateral lobe at the apex of the style (Fig. 42). It can be separated from *fredonia* by the shape of the apex of the style, which is distinctly bifid. This species has been collected in Wyoming.

Athysanella parca Ball & Beamer
Figs. 44–46

Athysanella parca Ball & Beamer 1940:15.

Length of male 2.7 to 3.4 mm, female 3.9 to 4.4 mm; head width of male 1.0 to 1.15 mm, female 1.15 to 1.4 mm; pronotal width of male 0.9 to 1.15 mm, female 1.05 to 1.25 mm; interocular width of male 0.4 to 0.5 mm, female 0.5 to 0.65 mm; vertex length of male 0.4 to 0.45 mm, female 0.45 to 0.55 mm; pronotal length of male 0.3 to 0.4 mm, female 0.4 to 0.45 mm. Vertex length 0.89 to 0.95 interocular width; pronotal length 0.82 to 0.88 vertex length.

Character code: 1-1-0-0-1-0-0-0-2-1-2-2-0-0-0-0-0-0.

Holotype, male, and allotype, female, from Belen, New Mexico, 20 July 1936 (R. H. Beamer and D. R. Lindsay) in KU; paratypes in KU.

Athysanella parca is related to *foeda* but can be separated by the absence of a lateral flange on the style and the usual presence of fuscous spots on the vertex. It can be separated from *incerta* by the shape of the apex of the shaft of the aedeagus, which has a single acute apical hook (Fig. 44). A long-winged female has been examined. This species has been collected in Colorado and New Mexico; in New Mexico, the host is saltgrass, *Distichlis stricta*.

Athysanella rostrata Ball & Beamer
Figs. 47–49

Athysanella rostrata Ball & Beamer 1940:21.

Length of male 3.5 mm, female 5.0 to 5.1 mm; head width of male 1.15 to 1.25 mm, female 1.3 to 1.35 mm; pronotal width of male 1.1 to 1.15 mm, female 1.2 to 1.25 mm; interocular width of male 0.5 to 0.55 mm, female 0.6 to 0.65 mm; vertex length of male 0.45 to 0.5 mm, female 0.5 to 0.55 mm; pronotal length of male 0.35 to 0.4 mm, female 0.4 to 0.45 mm. Vertex length 0.86 to 0.91 interocular width;

pronotal length 0.75 to 0.78 vertex length.

Character code: 0-1-0-0-2-0-0-0-2-2-2-2-0-1-0-0-0-0.

Holotype, male, and allotype, female, from Perris, California, 5 June 1935 (P. W. Oman) in USNM; paratypes in USNM.

Athysanella rostrata is related to *foeda* but can be separated by the distinctly elongate dorsal arm of the style (Fig. 48). A paratype with undeveloped genitalia has been examined. This species has been collected only from its type locality in southern California.

Athysanella fredonia Ball & Beamer
Figs. 50–52

Athysanella fredonia Ball and Beamer, 1940:12 (in part).

Length of male 2.6 to 2.9 mm, female 3.9 to 4.3 mm; head width of male 1.0 to 1.15 mm, female 1.15 to 1.4 mm; pronotal width of male 0.95 to 1.1 mm, female 1.0 to 1.25 mm; interocular width of male 0.4 to 0.45 mm, female 0.45 to 0.6 mm; vertex length of male 0.35 to 0.4 mm, female 0.4 to 0.5 mm; pronotal length of male 0.3 to 0.35 mm, female 0.35 to 0.4 mm. Vertex length 0.83 to 0.94 interocular width; pronotal length 0.75 to 0.87 vertex length.

Character code: 1-1-0-0-1-0-0-0-1-1-1-0-0-1-0-0-1-0.

Color stramineous; vertex with fuscous spots anteriorly; pronotum commonly with small brown spots; other dorsal body pattern variable; face with lateral fuscous marks; legs with various amounts of fuscous coloring.

Forewings brachypterous, exposing 3.5 to 4.0 pregenital abdominal terga; ocellus approximately its diameter from eye; hind tibial spur over 3/4 length of 1st tarsomere; female abdominal sternum VII (Fig. 52) with lateral lobes extending posteriorly slightly more than median lobe.

Pygofer rounded apically, densely set with short setae; valve rounded on apical margin; plates rounded apically, slightly separated at base; connective shorter than style; styles (Fig. 51) widened apically, nearly truncate, dorsal arm acute apically, curved, usually with conspicuous lateral flange, equal to apex of plates and pygofer; aedeagus (Fig. 50) with shaft not widened apically, finely serrate on ventral margin.

Holotype, male, from Fredonia, Arizona, 6 Aug 1930 (E. D. Ball) in USNM.

Athysanella fredonia is related to *cursa* but can be separated by the longer shaft of the aedeagus, which is not widened apically. Examination of the holotype has revealed that the male genitalia differ from the genitalia described by Ball and Beamer (1940). For this reason, *fredonia* is redescribed and a new species, *cursa*, which agrees with the published illustration, is described. It has been collected in Arizona, Colorado, New Mexico, Nevada, and Utah, where it occurs on galleta, *Hilaria jamesii*. At the type locality, it occurs with *cursa* on the same host (R. F. Whitcomb).

Athysanella cursa Blocker, n. sp.

Figs. 53-55

Athysanella fredonia Ball & Beamer (in part).

Length of male 2.5 to 3.0 mm, female 4.0 to 4.4 mm; head width of male 1.05 to 1.15 mm, female 1.2 to 1.3 mm; pronotal width of male 0.95 to 1.05 mm, female 1.1 to 1.2 mm; interocular width of male 0.4 to 0.45 mm, female 0.5 to 0.6 mm; vertex length of male 0.35 to 0.4 mm, female 0.45 to 0.5 mm; pronotal length of male 0.3 to 0.35 mm, female 0.35 to 0.4 mm. Vertex length 0.88 to 0.94 interocular width; pronotal length 0.8 to 0.88 vertex length.

Character code: 0-1-0-0-1-0-0-0-1-1-1-1-0-1-0-0-1-0.

Color stramineous with fuscous spots on vertex; vertex, pronotum, and abdomen variously patterned with brown markings; forewings commonly with brown stripes; face with lateral fuscous marks, legs with various amounts of fuscous coloring.

Forewings brachypterous, exposing 3.5 to 4.5 pregenital abdominal sterna; ocellus approximately 1.5X its diameter from eye; hind tibial spur usually about 1/2 length of 1st tarsomere; female abdominal sternum VII (Fig. 55) with lateral lobes slightly longer than median lobe.

Pygofer rounded but slightly extended apically; densely set with short setae; valve with caudal margin rounded; plates rounded apically; connective shorter than styles; styles (Fig. 54) widened apically and shallowly bifid, dorsal arm narrowed and acute apically, usually with a conspicuous lateral flange, equal to apex of plates and pygofer; aedeagus (Fig. 53) with shaft short, lightly serrate on ventral margin, with pronounced flanges on ventral margin, slightly widest in apical 1/2.

Holotype, male, from Whites City, New Mexico, 13 July 1936 (R. H. Beamer). One male and two female paratypes from Flagstaff, Arizona, 27 July 1936 (R. H. Beamer); two males from Flagstaff, Arizona, 21 July 1936 (D. R. Lindsey); female from St. Johns, Arizona, 26 July 1936 (R. H. Beamer); two males from Estancia, New Mexico, 24 June 1940 (R. H. Beamer); five males and one female from Cuervo, New Mexico, 23 June 1940 (R. H. Beamer). Holotype in KU; paratypes in KU and KSU.

Athysanella cursa is closely related to *hemijona* but can be separated by the shorter aedeagus with pronounced flanges on the ventral margin, the shorter tibial spurs, and the pygofer, which is slightly extended apically. The plates occasionally have a macroseta. Long-winged specimens and specimens parasitized by Dryinidae have been observed. This species is illustrated as *fredonia* in Ball and Beamer (1940), but a study of the holotype of *fredonia* reveals that this is a different species. It has been reported from the Desert Plains region of Arizona, Colorado, New Mexico, and Utah, where it occurs on galleta, *Hilaria jamesii*.

Athysanella hemijona Blocker, n. sp.

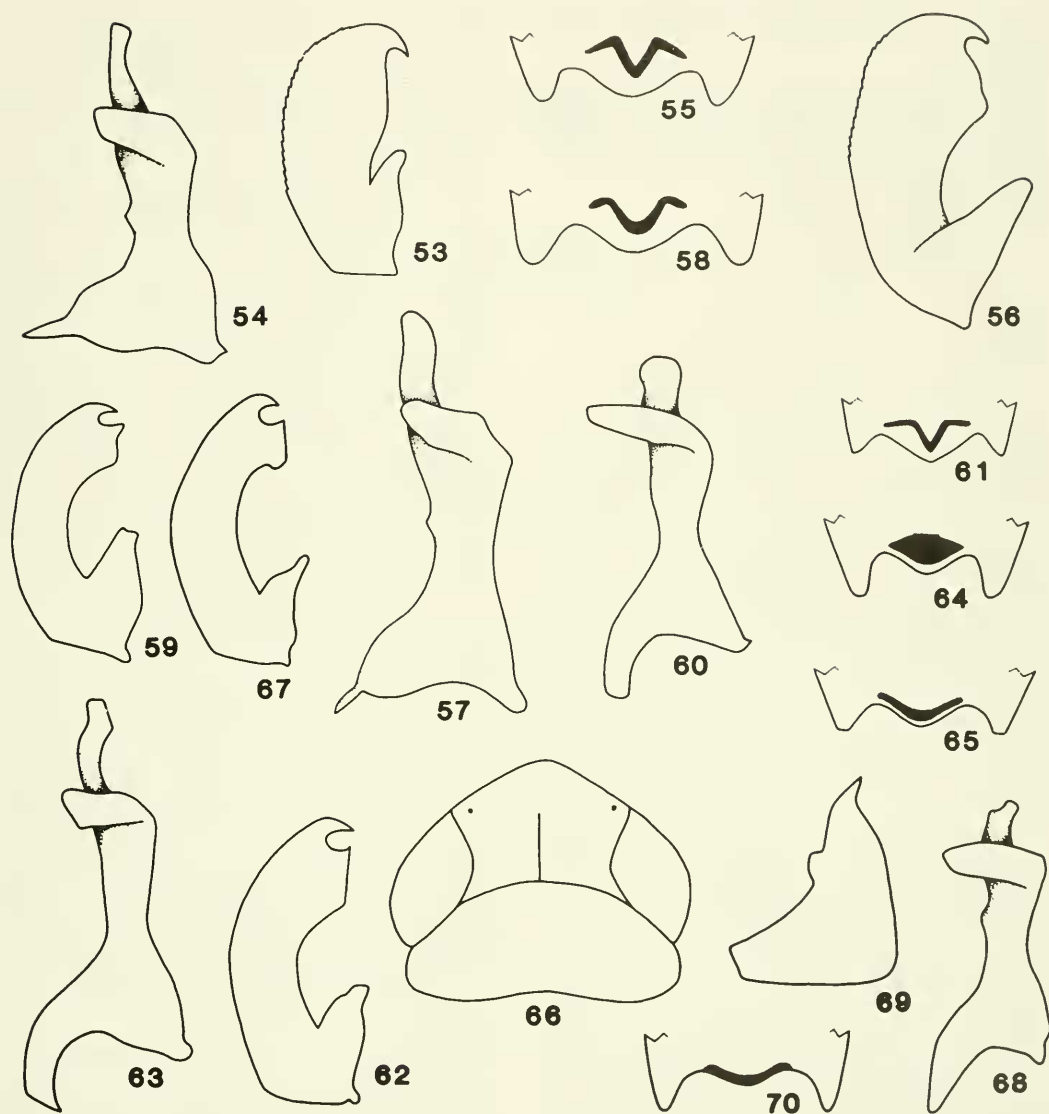
Figs. 56-58

Length of male 3.2 to 3.3 mm, female 4.8 to 4.9 mm; head width of male 1.2 to 1.25 mm, female 1.3 to 1.4 mm; pronotal width of male 1.1 to 1.15 mm, female 1.25 to 1.3 mm; interocular width of male 0.45 to 0.55 mm, female 0.5 to 0.55 mm; vertex length of male 0.4 to 0.45 mm, female 0.5 to 0.55 mm; pronotal length of male 0.35 to 0.4 mm, female 0.4 to 0.45 mm. Vertex length 0.85 to 0.95 interocular width; pronotal length 0.73 to 0.83 vertex length.

Character code: 1-1-0-0-1-0-0-0-1-1-1-1-0-1-0-0-1-1.

Color stramineous; vertex with fuscous spots; vertex, pronotum, and abdomen with conspicuous, dark pattern; forewings with darkened stripes; face with lateral fuscous marks; legs with various amounts of fuscous coloring.

Forewings brachypterous, exposing 3.5 to 4.5 pregenital abdominal terga; ocellus approximately 1.5X its diameter from eye; hind tibial spur over 3/4 length of 1st tarsomere; female abdominal sternum VII (Fig. 58) with



Figs. 53–70. Figs. 53–55. *Athysanella cursa*: 53, aedeagus, lateral view; 54, style, broad aspect; 55, female sternum VII, ventral view. Figs. 56–58. *Athysanella hemijona*: 56, aedeagus, lateral view; 57, style, broad aspect; 58, female sternum VII, ventral view. Figs. 59–61. *Athysanella incerta*: 59, aedeagus, lateral view; 60, style, broad aspect; 61, female sternum VII, ventral view. Figs. 62–65. *Athysanella kadokana*: 62, aedeagus, lateral view; 63, style, broad aspect; 64, 65, female sternum VII, ventral view. Figs. 66–70. *Athysanella salsa*: 66, head and pronotum, dorsal view; 67, aedeagus, lateral view; 68, style, broad aspect; 69, male plate, ventral view; 70, female sternum VII, ventral view.

median lobe approximately same length as lateral lobes.

Pygofer rounded apically, densely set with short, stubby setae; valve with caudal margin broadly rounded; plates broadly rounded, slightly separated at base; connective shorter than style; styles (Fig. 57) widened apically, shallowly bifid, dorsal arm constricted and

curved; preapical lobe inconspicuous, with conspicuous apical lateral lobe, extending to apex of plates and pygofer; aedeagus (Fig. 56) with shaft short, slightly wider apically, serrated on ventral margin.

Holotype, male, from Inyo Co., California, Westgard Pass, 14 June 1983, sweeping grasses (R. J. Gill and D. Blocker). Two male

and three female paratypes, same data. Holotype and paratype in KSU; paratypes in CDA and KU.

Athysanella hemijona is related to *curisa* but can be separated by the shape of the aedeagus, which is longer, and with the ventral margin not as flared. This species is known only from its type locality in California.

Athysanella incerta Ball & Beamer
Figs. 59–61

Athysanella incerta Ball & Beamer 1940:15.

Length of male 2.7 to 3.3 mm, female 3.9 to 4.1 mm; head width of male 1.05 to 1.1 mm, female 1.1 to 1.25 mm; pronotal width of male 1.0 to 1.1 mm, female 1.0 to 1.15 mm; interocular width of male 0.45 to 0.5 mm, female 0.5 to 0.55 mm; vertex length of male 0.35 to 0.45 mm, female 0.45 to 0.5 mm; pronotal length of male 0.3 to 0.35 mm, female 0.35 to 0.4 mm. Vertex length 0.84 to 0.95 interocular width; pronotal length 0.75 to 0.82 vertex length.

Character code: 1-1-0-0-1-0-0-0-2-1-2-2-0-0-0-0-0-0.

Holotype, male, and allotype, female, from Lamar, Colorado, 20 Aug 1936 (R. H. Beamer) in KU; paratypes in KU, USNM, and CSU.

Athysanella incerta is very closely related to *kadokana* but can be separated by the shape of the apex of the style (Fig. 60), which is not excavated as deeply, and with the dorsal arm neither expanded apically nor with an acute projection. Fuscous spots are sometimes present on the vertex of *incerta*. Long-winged specimens have been examined. This species has been collected in Colorado, Kansas, Montana, Nebraska, New Mexico, and Wyoming, and appears to be a specialist on *Distichlis spicata*.

Athysanella kadokana Knull
Figs. 62–65

Athysanella kadokana Knull 1951:180.

Length of male 2.7 to 3.4 mm, female 4.0 to 4.4 mm; head width of male 0.95 to 1.1 mm, female 1.1 to 1.25 mm; pronotal width of male 0.9 to 1.05 mm, female 1.05 to 1.15 mm; interocular width of male 0.4 to 0.5 mm, female 0.5 to 0.6 mm; vertex length of male 0.35 to 0.45 mm, female 0.45 to 0.55 mm; pronotal length of male 0.3 to 0.35 mm, female 0.35 to 0.4 mm. Vertex length 0.84 to 1.0 interocular

width; pronotal length 0.72 to 0.82 vertex length.

Character code: 0-1-1-0-1-0-0-0-1-2-2-2-0-1-0-0-0-1.

Holotype, male, from Kadoka, South Dakota, Badlands, 19 July 1950 (H. C. Severin) at OhSU.

This species is closely related to *salsa* but can be separated by the shape of the male plate, which is rounded, and by the apex of the style, which has a more conspicuous ventral arm (Fig. 63). The shape of the posterior margin of the female sternum VII is variable in this species (Figs. 64, 65). Specimens parasitized with Pipunculidae and Dryinidae and specimens with undeveloped genitalia have been examined; occasionally a specimen with faint spots on the vertex is seen. This species, collected in Colorado, South Dakota, Montana, Nebraska, Wyoming, and Canada, appears to be a specialist on *Distichlis spicata*.

Athysanella salsa Ball & Beamer
Figs. 66–70

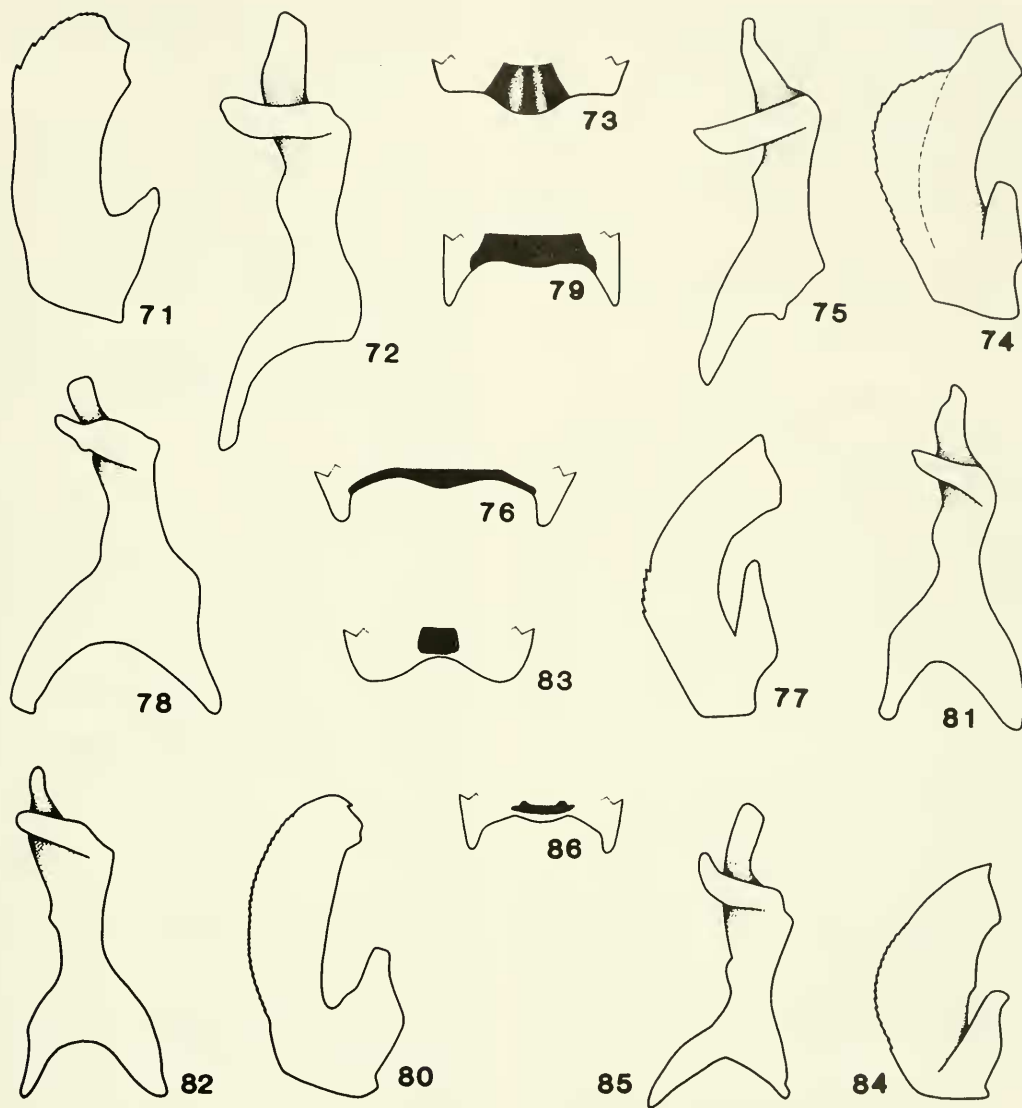
Athysanella salsa Ball & Beamer 1940:20.

Length of male 2.9 to 3.2 mm, female 3.6 to 4.4 mm; head width of male 1.0 to 1.15 mm, female 1.0 to 1.2 mm; pronotal width of male 0.9 to 1.05 mm, female 0.95 to 1.15 mm; interocular width of male 0.45 to 0.5 mm, female 0.45 to 0.55 mm; vertex length of male 0.4 to 0.5 mm, female 0.45 to 0.55 mm; pronotal length of male 0.3 to 0.4 mm, female 0.3 to 0.4 mm. Vertex length 0.94 to 1.1 interocular width; pronotal length 0.72 to 0.88 vertex length.

Character code: 0-1-1-0-2-0-0-0-2-1-2-2-0-1-0-0-0-0.

Holotype, male, and allotype, female, from St. John, Kansas, 11 Sept 1936 (R. H. Beamer) in KU.

Athysanella salsa is closely related to *kadokana* but can be separated by the truncate apices of the male plates and the less conspicuous ventral apical arm of the style (Fig. 68). Specimens studied from Mexico have fuscous spots on the vertex and dark stripes on the forewings. Long-winged females have been examined. Males and females parasitized by Dryinidae and undeveloped specimens have been examined. This species has been collected in Kansas, Texas, and Mexico, and appears to be a specialist on *Distichlis spicata*.



Figs. 71–86. Figs. 71–73. *Athysanella kanabana*: 71, aedeagus, lateral view; 72, style, broad aspect; 73, female sternum VII, ventral view. Figs. 74–76. *Athysanella furnaca*: 74, aedeagus, lateral aspect; 75, style, broad aspect; 76, female sternum VII, ventral view. Figs. 77–79. *Athysanella marthae*: 77, aedeagus, lateral view; 78, style, broad aspect; 79, female sternum VII, ventral view. Figs. 80–83. *Athysanella bifida*: 80, aedeagus, lateral view; 81, 82, style, broad aspect; 83, female sternum VII, ventral view. Figs. 84–86. *Athysanella utahna*: 84, aedeagus, lateral view; 85, style, broad aspect; 86, female sternum VII, ventral aspect.

Athysanella kanabana Ball & Beamer

Figs. 71–73

Athysanella kanabana Ball & Beamer 1940:20.

Length of male 3.1 to 3.6 mm, female 4.4 to 4.7 mm; head width of male 1.1 to 1.2 mm, female 1.25 to 1.4 mm; pronotal width of male 1.05 to 1.15 mm, female 1.2 to 1.3 mm; inter-

ocular width of male 0.5 to 0.55 mm, female 0.6 to 0.7 mm; vertex length of male 0.4 to 0.5 mm, female 0.5 to 0.55 mm; pronotal length of male 0.35 to 0.4 mm, female 0.35 to 0.45 mm. Vertex length 0.8 to 0.95 interocular width; pronotal length 0.76 to 0.88 vertex length.

Character code: 0-1-1-1-1-0-0-0-2-1-2-2-0-1-0-1-1-0.

Holotype, male, and allotype, female, from Kanab, Utah, 9 Aug 1936 (R. H. Beamer) in KU; paratypes in KU and USNM.

Athysanella kanabana is related to *tenera* but can be separated by the embrowned area on the plates, the aedeagus with apical crests on the shaft (Fig. 71), and the unique shape of the apex of the style (Fig. 72). Occasionally, there are fuscous spots on the vertex. Undeveloped specimens are represented in the paratype series. This species has been collected on *Sporobolus airoides* in Arizona, Kansas, New Mexico, and Utah.

Athysanella furnaca Blocker, n. sp.

Figs. 74–76

Length of male 3.1 mm, female 4.4 to 4.7 mm; head width of male 1.15 mm, female 1.25 to 1.3 mm; pronotal width of male 1.1 mm, female 1.2 to 1.25 mm; interocular width of male 0.5 mm, female 0.5 to 0.55 mm; vertex length of male 0.5 mm, female 0.5 to 0.55 mm; pronotal length of male 0.4 mm, female 0.4 to 0.45 mm. Vertex length equal to interocular width; pronotal length 0.78 to 0.79 vertex length.

Character code: 0-0-1-0-2-0-0-0-2-1-2-2-0-1-0-0-1-1.

Color stramineous, except for dark dots on abdomen and slight fuscous on legs.

Forewings brachypterous, exposing 3.5 pregenital abdominal terga; ocellus approximately 2X its diameter from eye; hind tibial spur 1/2 length (or less) of 1st tarsomere; female abdominal sternum VII (Fig. 76) with short lateral lobes and slight median projection.

Pygofer with caudal margin extended, exceeding anal tube, with approximately 25 setae; valve with caudal margin rounded; plates truncate apically, barely exceeding apex of valve; style with ventral arm short (Fig. 75), conspicuously flattened, dorsal arm elongate; connective 3/4 length of pygofer; aedeagus (Fig. 74) with conspicuous keels on shaft.

Holotype, male, from Death Valley, California, 5.7 mi N Furnace Cr., 19 March 1971 (Oman); two female paratypes, same data. Holotype and paratype in OrSU; paratype in KSU.

Athysanella furnaca is related to *kanabana* but can be distinguished by the medial crests on the shaft of the aedeagus and the connective, which is shorter than the style. This spe-

cies is known only from the type locality in the Mojave Desert of California.

Athysanella marthae Blocker, n. sp.

Figs. 77–79

Length of male 2.9 to 3.3 mm, female 4.1 to 4.6 mm; head width of male 1.15 to 1.25 mm, female 1.25 to 1.35 mm; pronotal width of male 1.1 to 1.2 mm, female 1.1 to 1.2 mm; interocular width of male 0.45 to 0.5 mm, female 0.5 to 0.55 mm; vertex length of male 0.4 to 0.45 mm, female 0.45 to 0.5 mm; pronotal length of male 0.35 to 0.4 mm, female 0.4 to 0.45 mm. Vertex length 0.89 to 0.95 interocular width; pronotal length 0.82 to 0.94 vertex length.

Character code: 0-1-1-0-2-0-0-0-2-2-2-1-0-1-0-0-1-1.

Color uniformly stramineous, except for irregular, fuscous markings on venter and legs.

Forewings brachypterous, exposing 3 to 4.5 pregenital abdominal terga; ocellus approximately 2X its diameter from eye; hind tibial spur 2/3 length of 1st tarsomere; female abdominal sternum VII (Fig. 79) with conspicuous lateral lobes on hind margin.

Pygofer broadly rounded apically, with fewer than 25 macrosetae, exceeding apex of plates; anal tube exceeding the apex of pygofer; valve with caudal margin rounded; plates short, truncate, with conspicuous microsetae; style (Fig. 78) with conspicuous lateral flange and preapical lobe, deeply bifid apically, dorsal arm truncate, ventral arm rounded, exceeding apex of plates and pygofer; connective 3/4 length of style; aedeagus (Fig. 77) with caudal margin of shaft serrate, troughlike in caudal view, with inconspicuous process apically, dorsal apodeme simple.

Holotype, male, from Cuatro Cienegas, Coahuila, Mexico, 9 June 1985, (A. L. Hicks) 1266B; five male and five females paratypes, same data. Holotype and paratypes in KSU; paratypes in IPL.

Athysanella marthae is related to *bifida* but can be distinguished by the conspicuous lateral flange of the style and the short, truncate plates. This species has been collected only at the type locality in Mexico on *Monanthochloe littoralis*. I name this species for my wife.

Athysanella bifida Ball & Beamer

Figs. 80–83

Athysanella bifida Ball & Beamer 1940:23.

Length of male 2.4 to 3.0 mm, female 3.1 to 3.7 mm; head width of male 0.9 to 1.05 mm, female 0.95 to 1.1 mm; pronotal width of male 0.8 to 1.0 mm, female 0.9 to 1.0 mm; interocular width of male 0.4 to 0.45 mm, female 0.4 to 0.5 mm; vertex length of male 0.35 to 0.45 mm, female 0.4 to 0.5 mm; pronotal length of male 0.25 to 0.35 mm, female 0.3 to 0.35 mm. Vertex length 0.87 to 1.0 interocular width; pronotal length 0.7 to 0.82 vertex length.

Character code: 0-1-1-0-1-0-0-0-1-2-2-1-0-1-0-0-1-0.

Holotype, male, and allotype, female, from Monument, Colorado, 19 Aug 1936 (R. H. Beamer) in KU; paratypes in KU and USNM.

Athysanella bifida is related to *utahna* and *yumana* but can be separated by the elongate shaft of the aedeagus (Fig. 80), which is not widened at midlength. Specimens parasitized by Dryinidae and Strepsiptera, undeveloped specimens, and long-winged specimens have been examined. This species has been collected in Arizona, Colorado, Montana, New Mexico, North Dakota, South Dakota, Texas, Wyoming, and Canada. In the southern part of its range, at least, the host is blue grama, *Bouteloua gracilis* (Hicks et al. 1988).

Athysanella utahna Osborn

Figs. 84–86

Athysanella utahna Osborn 1930:705.

Length of male 2.6 to 3.3 mm, female 3.9 to 4.9 mm; head width of male 0.9 to 1.05 mm, female 1.05 to 1.25 mm; pronotal width of male 0.85 to 1.0 mm, female 1.0 to 1.1 mm; interocular width of male 0.35 to 0.45 mm, female 0.45 to 0.55 mm; vertex length of male 0.4 to 0.45 mm, female 0.45 to 0.5 mm; pronotal length of male 0.3 to 0.35 mm, female 0.3 to 0.4 mm. Vertex length 0.94 to 1.13 interocular width; pronotal length 0.7 to 0.82 vertex length.

Character code: 0-1-0-0-1-0-0-0-2-1-2-0-0-1-0-0-1-1.

Lectotype, male, and lectoallotype, female, from Ephraim, Utah, 20 July 1914 (E. D. Ball) in USNM.

Athysanella utahna is related to *yumana* but can be separated by the more slender apical dorsal arm and less robust ventral arm of the style (Fig. 85). It can be separated from *bifida* by the shorter shaft of the aedeagus (Fig. 84). Rarely a specimen is seen with fuscous spots on the vertex; the styles occasion-

ally have a macroseta. Specimens with long wings and undeveloped genitalia and specimens parasitized by Dryinidae and Pipunculidae have been examined. This species has been collected in Arizona, California, Colorado, Idaho, Nevada, Utah, Oregon, Washington, Canada, and Mexico. Reported from saltgrass, *Distichlis spicata*, in Mexico and Utah.

Athysanella yumana Osborn

Figs. 87–89

Athysanella yumana Osborn 1930:704.

Length of male 2.8 to 3.1 mm, female 3.8 to 4.7 mm; head width of male 1.05 to 1.15 mm, female 1.1 to 1.25 mm; pronotal width of male 0.95 to 1.1 mm, female 1.0 to 1.2 mm; interocular width of male 0.4 to 0.45 mm, female 0.45 to 0.55 mm; vertex length of male 0.4 to 0.45 mm, female 0.45 to 0.50 mm; pronotal length of male 0.3 to 0.35 mm, female 0.3 to 0.4 mm. Vertex length 0.94 to 1.0 interocular width; pronotal length 0.76 to 0.82 vertex length.

Character code: 1-1-1-0-2-0-0-0-2-1-2-2-0-1-0-0-1-0.

Lectotype, male, and lectoallotype, female, from Yuma, Arizona (H. Osborn) in USNM; paratypes in USNM and KU.

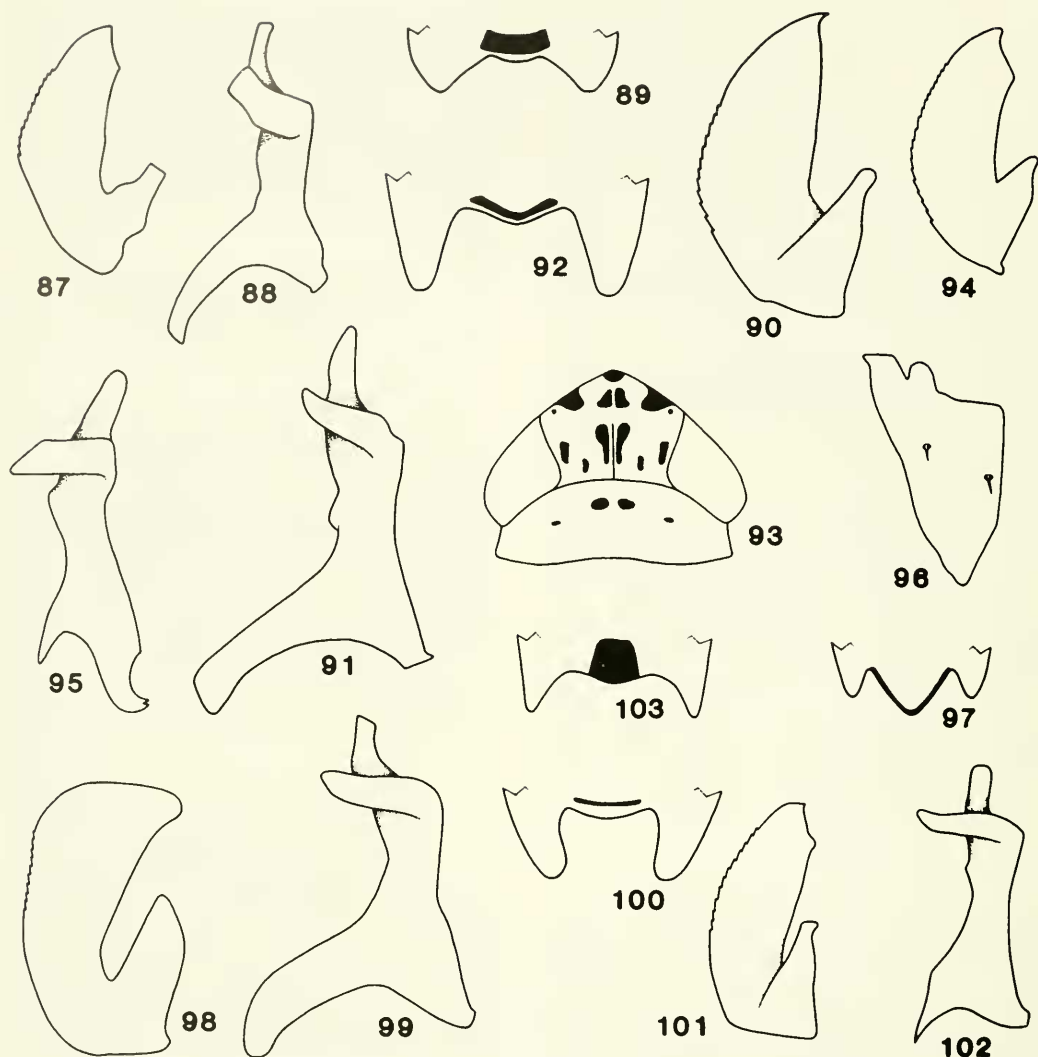
Athysanella yumana is related to *utahna* but can be separated by the shape of the apex of the style (Fig. 88), which has more robust ventral and dorsal arms. Occasionally, there are fuscous spots on the vertex. The style may have an occasional macroseta. This species has been reported from saltgrass, *Distichlis spicata*; it has been collected in Arizona and California.

Athysanella deserta Blocker, n. sp.

Figs. 90–92

Length of male 3.0 to 3.3 mm, female 4.3 to 4.8 mm; head width of male 1.1 to 1.2 mm, female 1.2 to 1.3 mm; pronotal width of male 1.05 to 1.15 mm, female 1.15 to 1.25 mm; interocular width of male 0.45 to 0.5 mm, female 0.5 to 0.6 mm; head width of male 0.45 to 0.5 mm, female 0.5 to 0.6 mm; pronotal length of male 0.35 to 0.4 mm, female 0.35 to 0.45 mm. Vertex length 0.9 to 1.0 interocular width; pronotal length 0.75 to 0.83 vertex length.

Character code: 0-0-1-0-2-0-1-0-2-2-2-2-0-1-0-0-1-1.



Figs. 87–103. Figs. 87–89. *Athysanella yumana*: 87, aedeagus, lateral view; 88, style, broad aspect; 89, female sternum VII, ventral view. Figs. 90–92. *Athysanella deserta*: 90, aedeagus, lateral view; 91, style, broad aspect; 92, female sternum VII, ventral view. Figs. 93–97. *Athysanella magdalena*: 93, head and pronotum, dorsal view; 94, aedeagus, lateral view; 95, style, broad aspect; 96, male plate, ventral view; 97, female sternum VII, ventral view. Figs. 98–100. *Athysanella laeta*: 98, aedeagus, lateral view; 99, style, broad aspect; 100, female sternum VII, ventral view. Figs. 101–103. *Athysanella stylosa*: 101, aedeagus, lateral view; 102, style, broad aspect; 103, female sternum VII, ventral view.

Color stramineous; faint orange pattern often seen on vertex; faint fuscous dots may be present on abdominal terga; face usually with faint lateral lines; venter with various amounts of fuscous coloring.

Forewings brachypterous, exposing 3.5 to 4.0 pregenital abdominal terga; ocellus approximately 1.5 its diameter from eye; hind tibial spur 1/3 to 1/2 length of 1st tarsomere; female abdominal sternum VII (Fig. 92) with

conspicuous lateral lobes, inconspicuous medial lobe rounded, with various amounts of fuscous coloring.

Pygofer with caudal margin rounded, with 25+ microsetae; plates separated at base, truncate apically, not reaching apex of pygofer; anal tube exceeding apex of pygofer; valve with caudal margin rounded; connective 2/3 length of style; styles (Fig. 91) slightly exceeding apex of pygofer with apical arm

enlarged at apex, ventral arm with small, acute process; aedeagus (Fig. 90) with shaft narrowed apically, finely serrate on ventral margin, approximately 2X length of dorsal apodeme.

Holotype, male, from Death Valley, California, 36 mi S Furnace Cr., 19 March 1971 (Oman); 18 male and 15 female paratypes, same data. Holotypes and paratypes in OrSU; paratypes in KSU.

Athysanella deserta is related to *yumana* but can be separated by the shape of the apical arms of the style with the dorsal arm enlarged at the apex and the ventral arm with a small, acute process. This species has been collected only at the type locality in the Mojave Desert of California.

Athysanella magdalena Baker

Figs. 93–97

Athysanella magdalena Baker 1898:185.

Length of male 2.2 to 2.7 mm, female 3.0 to 3.6 mm; head width of male 0.85 to 0.95 mm, female 0.95 to 1.1 mm; pronotal width of male 0.75 to 0.9 mm, female 0.9 to 1.1 mm; interocular width of male 0.3 to 0.4 mm, female 0.4 to 0.5 mm; vertex length of male 0.3 to 0.4 mm, female 0.35 to 0.45 mm; pronotal length of male 0.25 to 0.35 mm, female 0.3 to 0.35 mm. Vertex length 0.93 to 1.1 interocular width; pronotal length 0.8 to 0.91 vertex length.

Character code: 1-1-0-0-0-0-0-0-0-2-0-1-0-1-0-0-1-0.

Lectotype, female, from Magdalena Mts., New Mexico, Aug 1894 (F. H. Snow), and lectoallotype, male, from Forrester's Ranch, Laramie Co., Colorado, 3 Aug 1896 (No. 2013 of Baker) in USNM.

Athysanella magdalena is related to *tenera* but can be separated by the elongate plates and the shape of the apex of the style (Fig. 95), which is more clearly bifid. Plates occasionally have one or more macrosetae, and occasionally the male hind tibial spur is undeveloped. Numerous undeveloped specimens, specimens parasitized by Dryinidae and Strepsiptera, and long-winged males and females have been examined. This species, collected in Arizona, California, Colorado, Montana, New Mexico, Nevada, Oklahoma, Texas, Utah, Wyoming, and Mexico, is a common specialist of blue grama, *Bouteloua gracilis* (Whitcomb et al. 1987, Hicks et al. 1988).

Athysanella laeta Ball & Beamer

Figs. 98–100

Athysanella laeta Ball and Beamer, 1940:16.

Length of male 2.7 to 2.9 mm, female 3.8 to 4.1 mm; head width of male 1.0 to 1.1 mm, female 1.1 to 1.2 mm; pronotal width of male 0.95 to 1.05 mm, female 1.05 to 1.15 mm; interocular width of male 0.45 to 0.5 mm, female 0.5 to 0.55 mm; vertex length of male 0.35 to 0.4 mm, female 0.4 to 0.45 mm; pronotal length of male 0.35 to 0.4 mm, female 0.35 to 0.45 mm. Vertex length 0.75 to 0.89 interocular width; pronotal length 0.87 to 1.0 vertex length.

Character code: 1-1-1-0-2-0-0-0-2-1-2-0-0-1-0-0-1-1.

Holotype, male, from Huachuca Mts., Arizona, 15 July 1934 (E. D. Ball); allotype, female, same data except 14 July, in USNM; paratypes in USNM and KU.

Athysanella laeta is related to *incongrua* but can be separated by its usually smaller size and the shape of the shaft of the aedeagus (Fig. 98), which is shorter and not as avicephaliform apically. Some of the male paratypes have undeveloped genitalia. This species has been collected in New Mexico and Arizona.

Athysanella stylosa Blocker, n. sp.

Figs. 101–103

Length of male 2.4 to 2.8 mm, female 3.8 to 4.1 mm; head width of male 0.95 to 1.1 mm, female 1.15 to 1.2 mm; pronotal width of male 0.9 to 1.0 mm, female 1.05 to 1.1 mm; interocular width of male 0.35 to 0.45 mm, female 0.45 to 0.5 mm; vertex length of male 0.35 to 0.45 mm, female 0.4 to 0.5 mm; pronotal length of male 0.3 to 0.35 mm, female 0.3 to 0.4 mm. Vertex length 0.93 to 1.06 interocular width; pronotal length 0.75 to 0.82 vertex length.

Color stramineous with brown pattern on vertex and pronotum, vertex with fuscous spots, wings with brown stripes, face with brown arcs.

Forewings brachypterous, exposing 3 to 4.5 pregenital abdominal terga; ocellus approximately its diameter from eye; hind tibial spur 3/4 1st tarsomere; female abdominal sternum VII (Fig. 103) with well-developed lateral lobes, slightly concave medially.

Pygofer broadly rounded apically, with fewer than 25 setae; anal tube exceeds apex of

pygofer; valve with caudal margin rounded; plates rounded apically; styles (Fig. 102) bifid, dorsal arm acute, ventral arm truncate, without lateral flange or preapical lobe, exceeding apex of plates and pygofer; connective 3/4 length of style; aedeagus (Fig. 101) with shaft serrate on caudal margin, troughlike in caudal view, with inconspicuous process apically.

Holotype, male, from Roswell, Chaves Co., New Mexico, Bitter Lake Natl. WLR, 14 Aug 1984 (R. F. Whitcomb) 0868A; 17 male and 7 female paratypes, same data; 1 male paratype, same data except 21 Aug 1985, 01931. Holotype and paratypes in KSU; paratypes in USNM and IPL.

Athysanella stylosa is related to *supina* but can be distinguished by the fuscous spots on the vertex and by the shaft of the aedeagus, which is not as widened medially. This species is different in that the vertex length is equal to the interocular width and fuscous spots are present. It has been collected on gyp dropseed, *Sporobolus nealleyi*, in the gypsum flats of southeastern New Mexico.

Athysanella incongrua Baker

Figs. 104–106

Athysanella incongrua Baker 1898:188.

Length of male 3.0 to 3.4 mm, female 4.2 to 4.8 mm; head width of male 1.1 to 1.2 mm, female 1.15 to 1.35 mm; pronotal width of male 1.05 to 1.15 mm, female 1.1 to 1.25 mm, interocular width of male 0.45 to 0.5 mm, female 0.55 to 0.65 mm; vertex length of male 0.35 to 0.45 mm, female 0.45 to 0.5 mm; pronotal length of male 0.35 to 0.4 mm, female 0.35 to 0.45 mm. Vertex length 0.76 to 0.85 interocular width; pronotal length 0.88 to 1.0 vertex length.

Character code: 1-1-0-0-2-1-0-0-2-1-2-2-0-1-0-0-0-0.

Lectotype, male, from Fort Collins, Colorado, 21 July (C. F. Baker) in USNM.

Athysanella incongrua is related to *laeta* and *terebrans* but can be separated by the length and shape of the apex of the shaft of the aedeagus (Fig. 104). The fuscous spots on the vertex are commonly missing. Long-winged males and females have been examined. Specimens, collected in Colorado, Iowa, Kansas, Nebraska, New Hampshire, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming, appear to be associated with little

bluestem, *Schizachyrium scoparium*. The specimen from New Hampshire was collected by P. W. Oman at Wiley House, 20 Aug 1934.

Athysanella tenera Ball & Beamer

Figs. 107–109

Athysanella tenera Ball & Beamer 1940:17.

Length of male 2.5 to 3.0 mm, female 3.9 to 4.0 mm; head width of male 1.0 to 1.1 mm, female 1.1 to 1.2 mm; pronotal width of male 0.9 to 1.0 mm, female 1.0 to 1.15 mm; interocular width of male 0.4 to 0.45 mm, female 0.45 to 0.5 mm; vertex length of male 0.35 to 0.45 mm, female 0.4 to 0.45 mm; pronotal length of male 0.3 to 0.35 mm, female 0.35 to 0.4 mm. Vertex length 0.94 to 1.0 interocular width; pronotal length 0.76 to 0.8 vertex length.

Character code: 1-1-0-0-1-0-0-0-1-0-2-2-0-1-0-0-1-0.

Holotype, male, and allotype, female, from Las Vegas, Nevada, 8 Aug 1936 (R. H. Beamer) in KU; paratypes in KU.

Athysanella tenera is related to *magdalena* but can be distinguished by the shorter plates and the irregular shape of the outer apical arm of the style (Fig. 108), which is widened and appears to be trifid. This species is known only from the type locality in Nevada.

Athysanella vativala Blocker, n. sp.

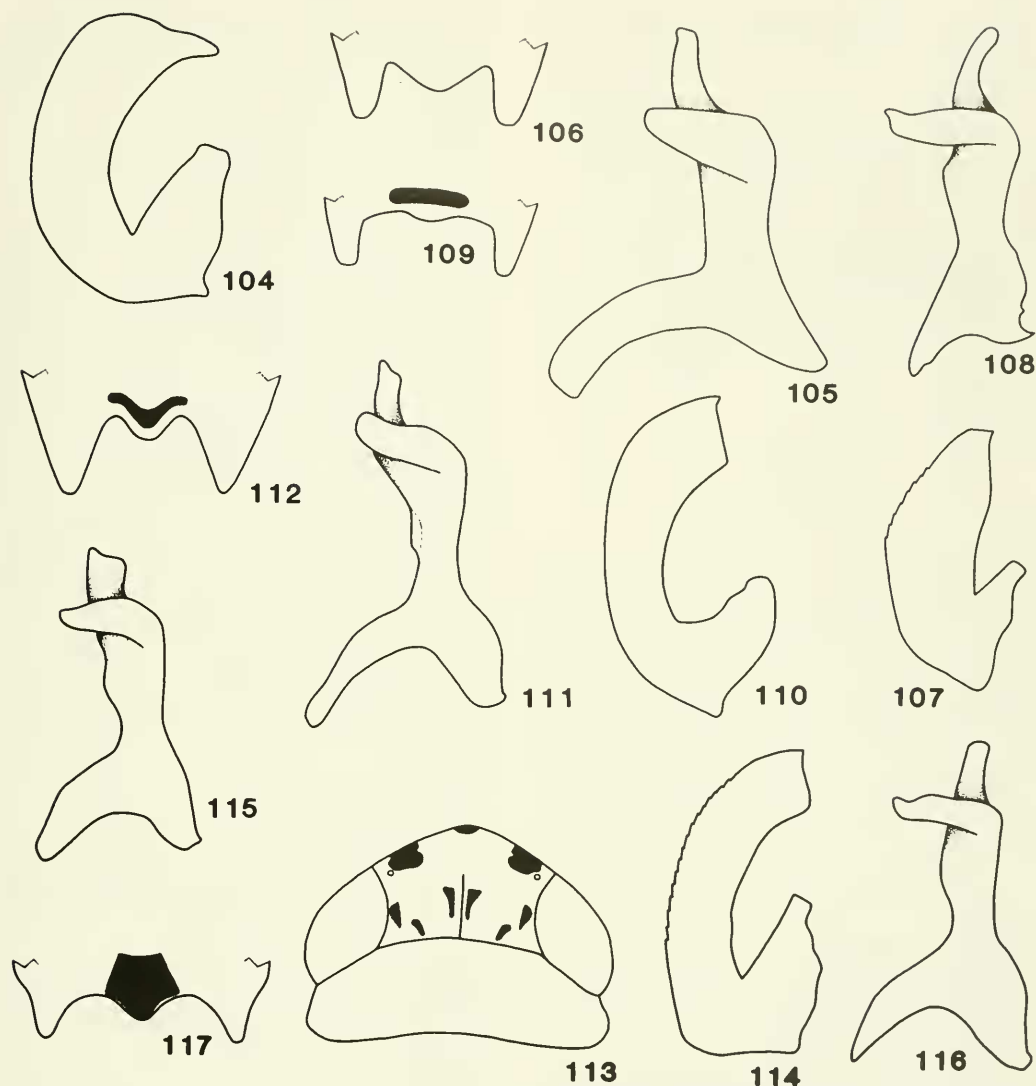
Figs. 110–112

Length of male 2.9 to 3.2 mm, female 4.2 to 4.6 mm; head width of male 1.05 to 1.15 mm, female 1.25 to 1.35 mm; pronotal width of male 1.0 to 1.15 mm, female 1.15 to 1.3 mm; interocular width of male 0.4 to 0.55 mm, female 0.55 to 0.65 mm; vertex length of male 0.35 to 0.5 mm, female 0.45 to 0.55 mm; pronotal length of male 0.35 to 0.4 mm, female 0.35 to 0.45 mm. Vertex length 0.78 to 0.9 interocular width; pronotal length 0.74 to 0.94 vertex length.

Character code: 1-0-0-0-1-0-0-0-1-1-1-0-0-1-0-0-1-0.

Color stramineous; vertex with fuscous spots; vertex, pronotum, and abdomen with additional brown pattern; forewings with darkened stripes; face with lateral fuscous marks; legs with fuscous areas.

Forewings brachypterous, exposing 4 to 4.5 pregenital abdominal terga; ocellus 2X its diameter from eye or less; hind tibial spur 1/2 length of 1st tarsomere; female abdominal



Figs. 104–117. Figs. 104–106. *Athysanella incongrua*: 104, aedeagus, lateral view; 105, style, broad aspect; 106, female sternum VII, ventral view. Figs. 107–109. *Athysanella tenera*: 107, aedeagus, lateral view; 108, style, broad aspect; 109, female sternum VII, ventral view. Figs. 110–112. *Athysanella vativala*: 110, aedeagus, lateral view; 111, style, broad aspect; 112, female sternum VII, ventral view. Figs. 113–117. *Athysanella terebrans*: 113, head and pronotum, dorsal view; 114, aedeagus, lateral view; 115, 116, style, broad aspect; 117, female sternum VII, ventral view.

sternum VII (Fig. 112) with lateral lobes much longer than medial lobe.

Pygofer rounded apically, fewer than 25 macrosetae; valve with caudal margin angulate; plates separated at base, rounded apically; connective $3/4$ length of style; styles (Fig. 111) deeply bifid, dorsal arm elongate and slender, ventral arm thickened, no preapical lobe present; aedeagus, in lateral view, with shaft slightly widened in apical half (Fig. 110), troughlike on ventral margin, and slightly serrate.

Holotype, male, from Sheridan Co., Nebraska, 7 mi N Rushville, Hwy 87, 9 Aug 1979 (H. D. Blocker and R. A. Sweet); female paratype, same data; 4 male and 7 female paratypes, Cherry Co., Nebraska, S Valentine, Hwy 83, mi 202, 10 Aug 1979 (H. D. Blocker and R. A. Sweet); 2 males, Cherry Co., Nebraska, near Mankar, Hwy 20, 9 Aug 1979 (H. D. Blocker and R. A. Sweet); 1 male, Bowman, North Dakota, 5 July 1968, GL 819 (Harris and Cooley); 2 males and 10 females, Tryon, McPherson Co., Nebraska, 7 Aug

1977, (R. F. Whitcomb) 0480. Holotype and paratypes in KSU; paratypes in CNC, IPL, USNM.

Athysanella vativala is very closely related and possibly conspecific with *terebrans* but can be separated by the shape of the apex of the style, which has a more slender dorsal arm, a more patterned and longer vertex, and the ocelli usually more distant from the eye. Undeveloped specimens and specimens parasitized with Strepsiptera have been examined. This species has been collected in Nebraska and North Dakota on *Calanovifla longifolia*.

Athysanella terebrans (Gillette & Baker)

Figs. 113–117

Euttetix terebrans Gillette & Baker 1895:102.

Length of male 2.7 to 3.1 mm, female 4.2 to 4.6 mm; head width of male 1.0 to 1.15 mm, female 1.2 to 1.35 mm; pronotal width of male 0.95 to 1.05 mm, female 1.15 to 1.3 mm; interocular width of male 0.45 to 0.5 mm, female 0.55 to 0.6 mm; vertex length of male 0.35 to 0.45 mm, female 0.45 to 0.5 mm; pronotal length of male 0.3 to 0.4 mm, female 0.4 to 0.45 mm. Vertex length 0.75 to 0.89 interocular width; pronotal length 0.82 to 1.0 vertex length.

Character code: 1-0-0-0-1-0-0-0-1-1-1-0-0-1-0-0-1-0.

Holotype, female, from North Park, Colorado, 30 July (Gillette) in USNM; allotype, male, from Wray, Colorado, 13 July 1899, at Colorado State University.

Athysanella terebrans is related to *incongrua* but can be distinguished by the dorsal apical arm of the style (Figs. 115, 116), which is rounded, and by the shaft of the aedeagus (Fig. 114), which is not conspicuously widened apically; the female abdominal sternum VII (Fig. 117) may be variable in shape. Long-winged and undeveloped specimens were commonly examined. This species has been collected in Colorado, Montana, Nebraska, North Dakota, South Dakota, Utah, Wyoming, and Canada. It is reported from *Dystichlis stricta* in Manitoba.

PHYLOGENY

Phylogeny of the subgenera of *Athysanella* is discussed in Blocker and Johnson (1988). The subgenus *Athysanella* is designated a sis-

ter of *Gladionura* and can be separated by the absence of a pygofer process in the former. The presence of a pygofer process is a convergent character that occurs in two other less closely related subgenera. We selected 40 characters that show differences within the subgenus for analysis. An intuitive phylogeny based on the proposed sequence of occurrence of major derived characters was generated, as well as an analysis by PAUP (Swofford 1986). Results of these analyses are shown in Figures 118 and 119. PAUP generated five equally most parsimonious trees; the tree with no unresolved trifurcations is presented here. A hypothetical ancestor consisting of a uniform plesiomorphic character set was utilized. Character sequences are contained in the preceding descriptions; the entire PAUP data set is available on request. Overall, the PAUP cladogram and the intuitive phylogeny are in good agreement. Species groups 1, 3, 4, and 7 are consistently grouped together (Fig. 119), whereas the *rostrata* and *incongrua-planata* groups are widely fragmented. It is possible that this fragmentation of the groups is indicative of the high degree of homoplasy in the genus.

The *robusta* group is characterized by retention of the rounded shape of the style apex; the male plates are embrowned in all species (2'); the styles are widened and often bifid apically in all other species (1'). This group is recognized in the PAUP output.

The *rostrata* group has an extended apex of the male style (1'); PAUP has the species in this group occurring close together but none as sisters.

The *incerta* group is characterized by the presence of a semicircular apex of the shaft of the aedeagus (3'). There is fairly good congruence in the cladogram, which includes *planata* as a sister of *incerta*.

The *terebrans-bifida* group is characterized by an aedeagal shaft that is serrate on the caudal margin (4'). The *terebrans* group has a shortened vertex (5'); five of the seven species are recognized by PAUP; the other two (*laeta* and *marthae*) split out sooner but are close. The *bifida* group retains an elongate vertex; they are represented in the last half of the cladogram, close together, but only *bifida* and *magdalena* are sisters.

The *incongrua-planata* group retains an aedeagus with a simple shaft. PAUP separates

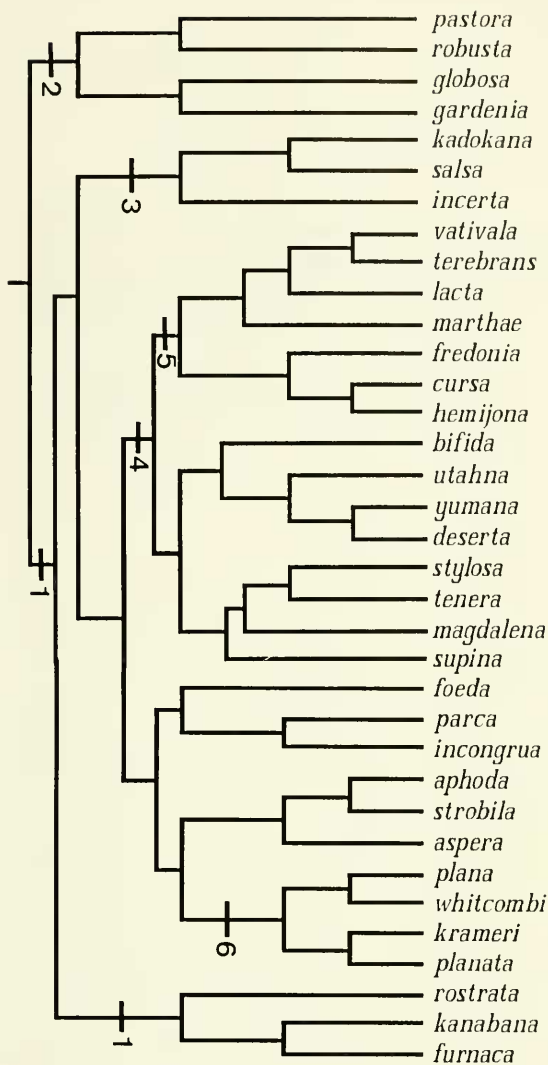


Fig. 118. Intuitive cladogram.

the *incongrua* group to a greater degree than any other group in the intuitive cladogram. The *planata* group species are characterized by an ocellus that is more remote from the eye than other groups (6') and all split out in the first half of the PAUP cladogram. Four species (*krameri*, *aspera*, *whitcombi*, and *plana*) arise from the cladogram in sequence.

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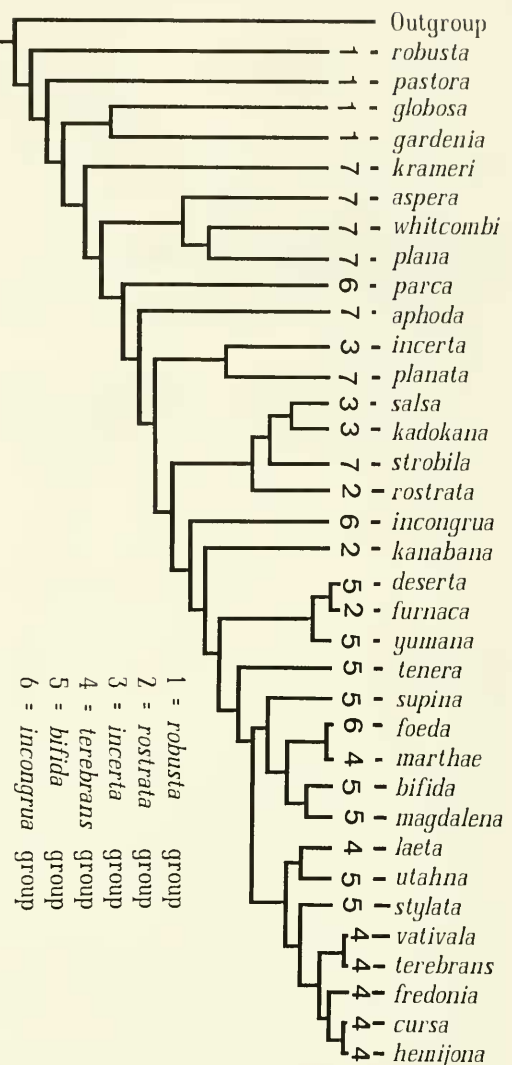


Fig. 119. PAUP cladogram.

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